New database technology will break down barriers. PAGE 30

SAP, users team up on software project. PAGE 7

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AUGUST 5, 2002 ▪ VOL. 36 ▪ NO. 32 ▪ $5/COPY

IBM FLEXES SERVICES MUSCLE, BUYS PWC

$3.5B deal would expand its consulting capabilities, but integration issues loom

BY JAIKUMAR VIJAYAN

IBM's planned purchase of PwC Consulting will make it a powerhouse that its rivals will find hard to match in the IT services and business process consulting industry, users and analysts said after the deal was announced last week.

INDUSTRY MERGERS

But they added that a lot depends on how well the companies integrate their two very different cultures.

"PwC has better acumen in niche and specialty areas, while [IBM] has better enterprise views and processes. From that standpoint, it's a great match," said Thomas Murphy, CIO at Royal Caribbean Cruises Ltd. in Miami. "On the other hand, I haven't seen many mergers of this size that didn't cause quite a bit of focus divergence and tumult."

The success of the merger will be measured based on how well IBM Global Services can incorporate the best of PwC, shed the worst and get back to business, he added.

IBM said it will acquire PricewaterhouseCoopers' consulting group for $3.5 billion in cash and stock. If the merger is approved, PwC's 30,000 employees and partners will become part of the Business Innovation Services unit within the $35 billion IBM Global Services organization. IBM said the deal is expected to be finalized late next month.

The purchase will give IBM a new set of high-end consulting capabilities focused on helping companies adopt, implement and manage technologies to meet specific business process objectives, said Stephanie Moore, an analyst at Cambridge, Mass.-based Giga Information Group Inc.

IBM/PwC, page 53

IT INVESTMENT MODEL WINS CONVERTS

Portfolio management being used to cut costs

BY THOMAS HOFFMAN

A growing number of businesses — led by blue-chip companies such as J.P. Morgan Chase & Co., Johnson & Johnson and Metropolitan Life Insurance Co. — are evaluating their IT investments with a more discerning eye by treating technology assets and projects more like financial portfolios.

IT ECONOMICS

According to research conducted by Stamford, Conn.-based Meta Group Inc., one in eight U.S. companies say they are now applying a portfolio management approach to evaluate their IT investments, compared with one in 12 companies in March. The new figures are based on input gathered from 1,332 IT managers during the second quarter, Meta said.

IT executives and analysts said portfolio management can help companies better manage technology. The cost of IT projects is measured against their potential financial value, risk and business impact, and budgets can then be allocated to the ones with the highest potential returns.

Some companies that have adopted the portfolio management model said they're seeing a real bottom-line impact. For instance, Merrill Lynch & Co. has saved between $25 million and $30 million over the past

IT Investments, page 12

What Is It?

IT portfolio management is used to review and adjust technology spending. Investment decisions are typically made by steering committees that weigh the anticipated risks and returns of different projects and decide whether to take a Buy, Hold or Sell approach to them.

DISCOVERING THE Leader WITHIN

EXECUTIVE EDUCATION SURVEY2002

HIGHLIGHTS:

- Tips for picking programs with payback
- The latest trends in executive education
- An in-depth look at six top programs

Atefeh Riazi, CIO, Ogilvy & Mather

ANDRE SOUROUJON

Our exclusive survey found that while IT managers are still gaining value from executive education programs, they'll spend less money this year to get it. To squeeze value from their investments, they're seeking opportunities to network with other high-level IT executives, share ideas and work together to solve problems.

STORIES BEGIN ON PAGE 38.

MICROSOFT TARGETS WIN 2K PROJECTS

IT execs say guidelines might be too limiting

BY CAROL SLIWA

Backed by a half-dozen partners, Microsoft Corp. last week announced a systems architecture program that aims to help companies reduce the cost, time and risk associated with integrating Windows 2000 Server into corporate computing infrastructures.

The Microsoft Systems Architecture for Internet Data Center is the first in a series of "prescriptive architecture guides" that the software vendor plans to make available in concert with hardware, storage and networking vendors and systems integrators.

The guides provide a blueprint and documentation for a specific hardware and software configuration — using

Windows 2000, page 10

NEWSPAPER

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1977

"640K ought to be enough for anybody."

1984

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2002

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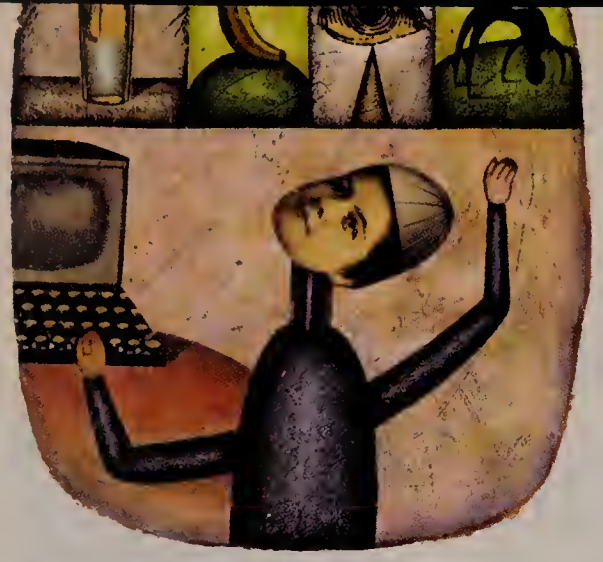


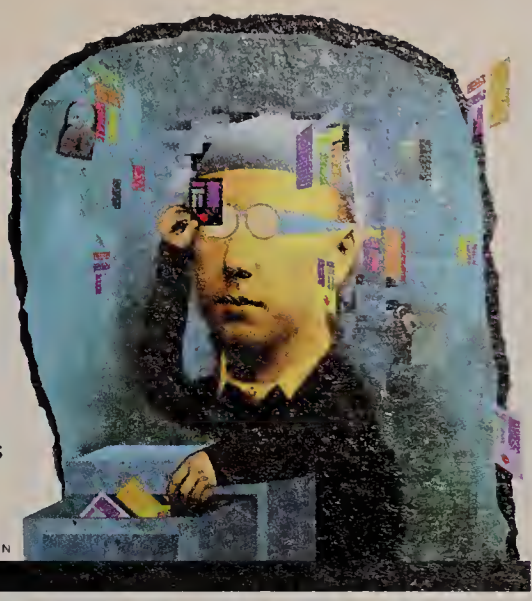
COLIN JOHNSON

STRESS SURVIVAL STRATEGIES

Layoffs, heavier workloads, fewer perks — IT workers have good reason to feel more pressure these days. We have tips on how to stay healthy. **PAGE 46**

PRESERVING WEB HISTORY

Companies are turning to Web archiving technologies to meet legal and regulatory obligations and ensure business continuity. **PAGE 26**



MICHAEL MORGENSTERN

AUGUST 5, 2002

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8 Microsoft is dropping plans to build support for the new InfiniBand I/O technology into its Windows .Net Server operating system.

14 Richard Clarke, the Bush administration's cybersecurity adviser, urges users to stop buying software that isn't secure.

15 Veritas Software is rolling out storage management tools for Linux systems, a technology that users say is lacking now.

BREAKING NEWS

For breaking news, updated twice daily, visit:
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www.computerworld.com

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34 Emerging Technologies: Audio mining, the ability to search spoken word files, has been made possible by improvements in voice-recognition technology.

36 Security Journal: A SANS Institute class keeps Mathias Thurman on his toes by offering practical, hands-on intrusion-detection systems training at a rapid pace.

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44 Securing networks at financial services companies isn't dependent on bleeding-edge technology; regularly reviewing employees' computer and network access rights is the first step.

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47 Workstyles: The IT department at NASA's Goddard Space Flight Center enjoys the thrill of having a truly heavenly mission.

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20 Tish Keefe thinks that it's time IT joined the Bush administration's crusade against shoddy, unsafe software and encourages organizations to stop subsidizing poor programming.

20 Pimm Fox says using demand-management software based on a workflow process lets an IT department organize and keep track of operations, while gaining the respect of internal customers.

21 Thornton May writes that IT auditors can raise the level of trust in this era of profound skepticism.

54 Frank Hayes points out that last month's hacking of a Yale University admissions Web site should remind all Web site developers of the basic lessons of Security 101.

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ONLINE

DIVERGING DATABASES

IBM and Oracle are pursuing different strategies in data management technologies.
QuickLink: 31565

SERVICE PACK: TOO ROBUST?

Service Pack 3 (SP3) for Windows 2000 weighs in at 125MB — more than the complete MS-DOS 3.3, points out technology evaluations editor Robert L. Mitchell in our Operating Systems community. What do you think of the new SP3? Post your opinion, and read what others have to say. QuickLink: a2380

RATING PRIVACY

Corporations would invest more in data security if there was a public rating system — similar to "triple-A" and "junk bond" ratings — to reward their efforts, says privacy columnist Jay Cline.
QuickLink: 31808

WHAT'S A QUICKLINK?

On some pages in this issue, you'll see boxes with this arrow icon. They mention QuickLink codes that point to additional, related content on our Web site. Just enter that code into our QuickLink box online, which you'll see at the top of each page on our site.

Use QuickLinks to see related stories, discussion forums, research links, archives and more.

BRIEFS

UCITA Law Changed In Bid for Support

The group that drafts state-level commercial laws removed a controversial "self-help," or remote software shut-off, provision from the Uniform Computer Information Transactions Act (UCITA) at its annual meeting. The National Conference of Commissioners on Uniform State Laws hopes that change and others will reduce opposition to the proposed software licensing law.

HP Backs Down From Litigation Threat

Hewlett-Packard Co. retreated after threatening to sue a team of researchers that publicized a security hole in its Tru64 Unix operating system. The company said that a letter sent to the researchers last week "was not indicative of HP's policy" and added that the company won't use digital copyright laws "to stifle research or impede the flow of information." Read more on our Web site [QuickLink: 31840].

Corio to Acquire Qwest's ASP Assets

San Carlos, Calif.-based Corio Inc. said it plans to buy the assets of Denver-based Qwest Communications International Inc.'s application service provider subsidiary for $15 million in cash. Customers of the Qwest CyberSolutions LLC unit will be switched to Corio but will still be served from Qwest's data centers, the companies said.

Trojan Horse Code Found in OpenSSH

The developers of OpenSSH, an open-source terminal connectivity and file-transfer technology, warned that several versions contain a Trojan horse that could let attackers take control of systems. The code has been found in Versions 3.2.2p1, 3.4p1 and 3.4.

IBM Pushes Migration With 'Green Streak'

Company aims to move users from AS/400 systems to iSeries with new program

BY JAIKUMAR VIJAYAN

SERVER MARKET

An IBM migration program that offers discounts of up to 50% on hardware for users who move from old AS/400 server models to qualified new iSeries systems should prove appealing, particularly to small businesses and companies with replicated sites, users and analysts said.

IBM last week officially launched its Green Streak migration program aimed at users of older green-screen AS/400 systems, such as those in the 4xx, 5xx and 6xx series.

Users of such systems can save up to half the cost of hardware if they migrate to either the iSeries server Model 270-2433 or Model 820-2436 before Dec. 31. Model 270-2433 will be priced at $23,000, rather than $47,000. The 820-2436, which usually costs $110,000, is being offered at $55,000.

In addition, users can receive a discount of up to 32% off the one-time charge for software or software subscriptions if they order those items when they buy their hardware. Users who purchase their hardware and software before the end of the third quarter will get up to 38% off the price of the qualifying software.

Discounts May Spur Upgrades

Such discounts will certainly appeal to users who haven't upgraded because of price, said Raymond Hawkins, a product manager at Sirius Computer Solutions, a San Antonio-based reseller of iSeries systems.

As IBM has continued to upgrade and refresh the iSeries line — which is the new name for the AS/400 — users of older boxes have been finding it increasingly expensive to catch up, Hawkins said.

"Green Streak gives people who have been stuck on an entry-level model or in a 5xx or 6xx environment a path to upgrade," Hawkins said.

"I'm relatively ecstatic," said Michael Crump, a project leader at Saint-Gobain Containers, a Muncie, Ind.-based packaging company.

Saint-Gobain Containers has four AS/400 systems. The company was planning to upgrade one of the systems to iSeries technology prior to IBM's launch of the Green Streak initiative. Now, Crump said, Saint-Gobain Containers intends to use the savings from the discounts it will get to buy additional functionality that it had originally planned to acquire next year, such as a high-availability capability.

"[Green Streak is] going to allow me to do this without my having to ask for more money," Crump said.

Faithful to AS/400

Nonetheless, it isn't clear how many AS/400 users will be similarly inclined to upgrade, analysts said.

A lot of users remain on older AS/400 models because there's little reason to upgrade, said Wayne Kernochan, an analyst at Boston-based Aberdeen Group Inc. At many companies, the systems are reliable and have continued to deliver the needed performance, he said.

"IBM has seen a significant downward trend in iSeries revenues, some of which is clearly due to their customer base saying, 'I'm satisfied with what I've got and am not going to upgrade,' " Kernochan said.

With this price cut, "what IBM has done is to lower the price to a point where some people might want to reinvest in the technology again," said Al Barsa, president of Barsa Consulting Group LLC, a Purchase, N.Y.-based iSeries consulting firm.

Reporter Todd Weiss contributed to this story.

Green Streak: The Fine Print

ORDERS for the eligible hardware and optional qualifying software and/or software subscription must be placed on or before Dec. 13.

INSTALLATION must be completed no later than Dec. 31.

USERS who install their qualifying software or start their qualifying software subscription by Sept. 30 will receive a 38% discount on software.

USERS who install their software between Oct. 1 and Dec. 31 will receive a 32% discount.

SOURCE: IBM

IBM Expands Server Cluster Technology

New Unix cluster targeted for large commercial apps

BY JAIKUMAR VIJAYAN

IBM last week introduced what is being touted as the largest preconfigured server clusters for running commercial Unix applications.

IBM's new eServer Cluster 1600 is available in pretested, fully integrated configurations of up to 32 IBM eServer p690 32-processor systems and 32 IBM eServer p670 16-way systems.

The clusters are being positioned both as server consolidation platforms and for commercial applications, such as large databases, that need the scalability and processing power that only large clusters can deliver, said Barbara Butler, a director in IBM's eServer business unit.

Prices start at about $2.4 million for an eServer Cluster 1600 that has two 32-way p690 servers with up to 32 partitions and a control workstation.

The clusters take advantage of IBM's high-performance General Parallel File System technology and the same management software that's found on the company's SP supercomputers. The technology allows IBM to build large server clusters that can be monitored and managed from a central point of control.

But unlike SP clusters, which are built using a large number of relatively small servers, the eServer Cluster 1600 is based on IBM's highly scalable p690 and p670 servers, which can be partitioned into multiple, smaller systems.

The advantage for users is that they can now build large clusters using fewer servers, making the clusters easier to manage and deploy, Butler said.

"It appears that the clusters offer a lot of functionality in a smaller footprint," said Ralph R. Maggi, senior manager of Unix and distributed technology at Philip Morris Cos. in Richmond, Va.

Philip Morris has been using an SP cluster for almost seven years. The company is looking at the partitioning features and scalability of p690 and p670 nodes to see if it can deploy a large cluster to consolidate ap-

Ford, Caterpillar Team With SAP on Supply Chain Project

Alliance to beef up logistics software

BY MARC L. SONGINI

Ford Motor Co. and Caterpillar Inc. are jointly creating a blueprint for a customized supply chain application that will be built around SAP AG's software and ultimately made available to manufacturers outside of the auto industry.

The software alliance, which was announced last week by the three companies, will develop a set of logistics applications designed to speed up the frequency and accuracy of spare parts deliveries while cutting inventory costs. The software will also let Ford dealers see parts inventories and the status of customer orders via the Internet.

That kind of real-time view is impossible now, according to Kristin Odeh, director of global consumer services at Ford.

The applications will be based on SAP's supply chain and customer relationship management modules and will initially be used by only Ford and Peoria, Ill.-based Caterpillar's logistics subsidiary.

Caterpillar Logistics Services Inc. handles warehousing services for some of Ford's operations, and the companies last year agreed to create a spare parts management system. As part of that deal, Odeh said, Ford and Caterpillar plan to update their legacy mainframe and client/server systems — some of which are 25 years old — with Web-based technology.

But after evaluating various software vendors, Ford and Caterpillar found that no packaged applications currently on the market could fully meet their needs. The two companies decided to work with SAP, which had about 80% of the requirements in place, Odeh said.

None of the three companies would disclose any information about the project's expected cost or potential return on investment. The development work is slated to take several years to complete, but Odeh said Ford hopes to start going live with pieces of the software within 18 months.

When the applications are available, Ford will be able to use Web portal technology to more tightly connect its network of 15,000 dealers and 6,000 suppliers, Odeh said.

SAP will lead the development work, but all three companies are contributing workers to the project. The biggest challenge is expected to be managing the scope of the project and keeping it on track to deliver a good ROI, said Dave Hoffman, president of the Caterpillar logistics unit.

That was a major pitfall on a similar co-development project that SAP did in the late 1990s with companies in the apparel and footwear industry. The resulting software was plagued by bugs, prompting the vendor to restrict its sales for more than two years. The company recently restarted aggressive marketing of the applications after releasing an upgrade to the products in January [QuickLink: 30945].

SAP said it views the two projects as different situations because the apparel applications had to be built from scratch. Ford officials noted that "a rigorous governance process" involving executives from all three companies is being put in place to monitor the logistics project.

Karen Peterson, an analyst at Gartner Inc. in Stamford, Conn., said in a report that the scale of the initiative with Ford and Caterpillar will put SAP to the test. Ford manages 600,000 parts, "a challenge no vendor has yet proven it has the functions to meet," she wrote.

Three Software Amigos

Details about the joint software development project planned by Caterpillar, Ford and SAP:

- **The companies** haven't decided what hardware and operating system platform the software will run on. A final project blueprint is due within six months.
- **Spare-parts planning** and global sourcing capabilities related to spare parts will be added to SAP's supply chain software, along with a new warehouse logistics management system.
- **Caterpillar's logistics** unit will use the software to service Ford and other customers; SAP will sell it to companies in other industries.

APPLICATION-AWARE

For more coverage of business applications, head to our ERP/Supply Chain Knowledge Center.

QuickLink: k2000
www.computerworld.com

Pentagon to Order Wireless Disconnect

CIO plans to bar use of technology in military facilities due to security fears

BY DAN VERTON
LAS VEGAS

GOVERNMENT IT

The inherent insecurity of wireless devices is now a matter of national security.

John Stenbit, the Pentagon's CIO, said last week that he plans to issue new policy guidelines that will ban the use of most, if not all, wireless devices within military installations.

Officials at the Department of Defense fear that the latest generation of wireless devices, including cell phones and two-way pagers, can be used as eavesdropping devices during classified meetings.

Military facilities and offices that are used for highly classified meetings are already routinely scanned for the presence of listening devices.

However, with the growing use of personal wireless communication systems, security audits increasingly find military officers attending meetings in classified office spaces with such devices in tow. That creates the potential for adversaries to turn the devices into crude eavesdropping systems, military officials acknowledged.

Devices such as cell phones have long been banned from facilities known as Sensitive Compartmented Information Facilities (SCIF). However, the new Pentagon policy extends the wireless ban to the majority of office spaces where sensitive but unclassified information may be discussed.

It also builds on a wider policy of using the federal government's purchasing power to get the IT industry to improve the security of its products.

"Why is it that companies have sold products that they know are insecure?" asked Richard Clarke, chairman of the president's Critical Infrastructure Protection Board. "And why is it that people have bought them? We should all shut [wireless LANs] off until the technology gets better."

Steven Aftergood, a defense analyst at the Federation of American Scientists in Washington, said the policy change makes perfect sense for a high-risk environment such as the military.

"People get accustomed to using nifty products that are extremely useful in other parts of their lives," said Aftergood. "And it's easy to forget that these are inappropriate in a secure environment."

The change in policy follows reports in *Computerworld* earlier this year about the results of wireless security audits at major U.S. airlines and the facility housing the Defense Department's global network operations center.

In May, for example, a wireless security consultant detected a nonsecure wireless LAN at the Defense Information Systems Agency (DISA) in Arlington, Va., while parked across the street from the agency's headquarters [QuickLink: 29842]. DISA said the wireless LAN let building security workers remotely operate a closed-circuit TV camera. It added that it was working with vendors to make the system more secure.

Correction

A front-page story in our July 29 issue overstated the amount of money that Owens & Minor Inc. expects to save by consolidating its IT outsourcing contracts from two vendors to one. The projected savings total about $30 million over the next seven years.

plications. Such preconfigured clusters also help companies cut testing and deployment time, Maggi said.

IBM's announcement builds on a trend in the industry, said Jonathan Eunice, an analyst at Illuminata Inc., a Nashua, N.H.-based consultancy.

During the past two years, IBM and other leading hardware vendors, such as Sun Microsystems Inc. and Hewlett-Packard Co., have been trying to move clustering technology from its high-performance computing niche to more commercial uses by offering easy-to-deploy preconfigured clusters, Eunice said. IBM's clusters appears to be the biggest example of this trend so far, he noted.

HARDWARE COVERAGE

Knowledge Center: Visit our Web site for the latest news and information.

QuickLink: k2200
www.computerworld.com

Microsoft Drops OS Plans for InfiniBand

Joins Intel in pulling back on support for high-speed I/O interconnect technology

BY LUCAS MEARIAN

MICROSOFT CORP. last week disclosed that it no longer plans to build an InfiniBand management capability into the upcoming Windows .Net Server operating system, dealing another blow to the new high-speed I/O architecture.

Instead, Microsoft is betting on Gigabit Ethernet and Fibre Channel for blade server clustering and storage device connectivity within Windows .Net Server. That approach relies on existing IT infrastructures, which should help users contain costs, Microsoft said.

Valerie See, group manager of Microsoft's Windows Hardware Evangelism division, said IT managers are "gravitating toward evolutionary technology that allows them to use existing technology . . . vs. an expansion of capabilities or a wholesale replacement of an existing architecture."

Change of Plans

Microsoft had planned to put native support for InfiniBand in Windows .Net Server, which is due to ship by year's end. But instead it became the second major IT vendor to back away from the technology in the past two months, following a decision by Intel Corp. to stop developing InfiniBand controller chips [QuickLink: 30178].

Dell Computer Corp. had been working with Microsoft and start-up InfiniBand vendors to use the high-speed I/O interconnect as the backbone for its upcoming PowerEdge "brick" servers, which will enable modular configuration and reconfiguration of rack-mounted servers.

Jimmy Pike, director of server architecture and technology at Dell, said InfiniBand is still the leading technology "for the problem we're trying to solve: creating a high-bandwidth, low-latency interconnect."

"There are other software avenues besides Microsoft," he added.

IDC in Framingham, Mass., said some $300 million has been invested in dozens of InfiniBand start-ups thus far. But Microsoft's withdrawal will likely hurt the emerging market, some analysts said.

"That's the No. 1 server platform on the planet, and when they back away, it has ramifications on the entire server community," said Steve Duplessie, an analyst at Enterprise Storage Group Inc. in Milford, Mass.

But observers said Microsoft's move doesn't signal a general deterioration of support for the technology. Indeed, both Intel and Microsoft have said they will work with third-party vendors to integrate InfiniBand into their products. But to use InfiniBand as the backbone I/O technology for clusters of systems based on Windows .Net Server, users will have to buy drivers from other vendors. ◗

WHAT IT IS

INFINIBAND is an emerging I/O technology designed to support high-speed server clustering and connections between systems and storage devices. It's based on a switched, serial architecture that provides data transfer speeds of up to 10GB/sec., with 30GB/sec. to come eventually.

FULL SPEED AHEAD

Rivals say Microsoft's move won't affect their plans.

QuickLink: 31870
www.computerworld.com

ROLLOUTS

INFINIBAND VENDORS AND PRODUCTS:

IBM plans InfiniBand fabric support for its DB2 Universal Database and InfiniBand-ready BladeCenter servers sometime next year.

Lane 15 Software Inc. plans to begin shipping a network management software platform next year.

InfiniCon Systems Inc. will begin shipping its host channel adapters (HCA), switches and software next month.

JNI Corp. began shipping 1x and 4x HCA modules to resellers in December.

Mellanox Technologies Inc. began shipping 10G bit/sec. bridging devices for HCAs and switches to resellers in January 2001.

Microsoft, AT&T Target Wireless Data Access

Services planned for Windows devices

BY CAROL SLIWA

Microsoft Corp. and AT&T Wireless Services Inc. last week announced a partnership on software and services aimed at making it easier for users of Windows-based Pocket PCs, Smartphones and laptops to gain access to corporate data.

Plans call for AT&T Wireless to sell Windows-based devices that can bring users e-mail from their Exchange Server systems and data from other business applications through its next-generation network, which is based on Global System for Mobile Communications/General Packet Radio Service technology.

AT&T's network is now operating in some U.S. cities and is due to be available nationwide by year's end. The first set of services and devices based on Microsoft's Pocket PC Phone Edition software is expected to be rolled out in the fourth quarter, the companies said.

Manufacturers will be announced soon, said AT&T Wireless CEO John Zeglis.

"This thing is real," Zeglis said of the partnership, noting that user trials of the planned technology are under way. He insisted that the partnership isn't founded on a "vague agreement that never really amounts to much."

CEO Steve Ballmer said that Microsoft has been working with Redmond, Wash.-based AT&T Wireless for about six months on issues such as ease of deployment and security.

The agreement calls for Microsoft and AT&T Wireless to collaborate on development, marketing and sales. But the alliance is hardly exclusive. Microsoft has also announced deals this year with Sprint PCS Group, Verizon Wireless and VoiceStream Wireless Corp., although Microsoft officials said each agreement is different.

Market Perceptions

Steve Sommer, CIO at New York-based law firm Hughes Hubbard & Reed LLP, said he plans to pay close attention to Microsoft's partnership with AT&T Wireless. Better wireless accessibility would be a great aid to mobile workers, "as long as Microsoft puts the money, time, R&D and programming" into the effort, he said.

But Jon Dell'Antonia, vice president of information systems at Oshkosh B'Gosh Inc. in Oshkosh, Wis., said his company has no plans to give employees wireless network access. "It's been too slow, comparatively speaking, and access is spotty," Dell'Antonia said.

Ken Dulaney, an analyst at Stamford, Conn.-based Gartner Inc., said he has "little confidence" that wireless network operators can become enterprise-class vendors. "Their salespeople typically can't tell the difference between a flat file and a database," he said.

Microsoft, meanwhile, is trying to "get to somebody who will support the Smartphone, because they've been shut out by all the manufacturers," Dulaney said. "Nokia, Siemens [and] Motorola refuse to accept the Smartphone, so Microsoft is sitting there without a market."

AT&T Wireless plans to offer phones running Microsoft's Windows-based Smartphone 2002 software next year, following its initial rollout of a voice-enabled personal digital assistant (PDA) based on Pocket PC Phone Edition (see box).

To ease deployment, the companies said they have developed activation and provisioning technology that will eliminate the need for IT managers to manually install applications on each device. ◗

Wireless Windows

The deal between Microsoft and AT&T Wireless includes plans for the following:

- **A voice-enabled PDA** that provides integrated voice and data calling as well as calendar, in-box, Web browsing and digital media features.
- **Location-based services** for finding business offices and other destinations, using Microsoft's MapPoint technology and .Net Compact Framework.
- **A "one-button-sync" software wizard** meant to simplify access from wireless-ready laptops to Microsoft Exchange and Outlook messaging clients over virtual private networks.

EMBEDDED OS UPGRADE

Microsoft releases new Windows CE .Net software for use in mobile devices.

QuickLink: 31862
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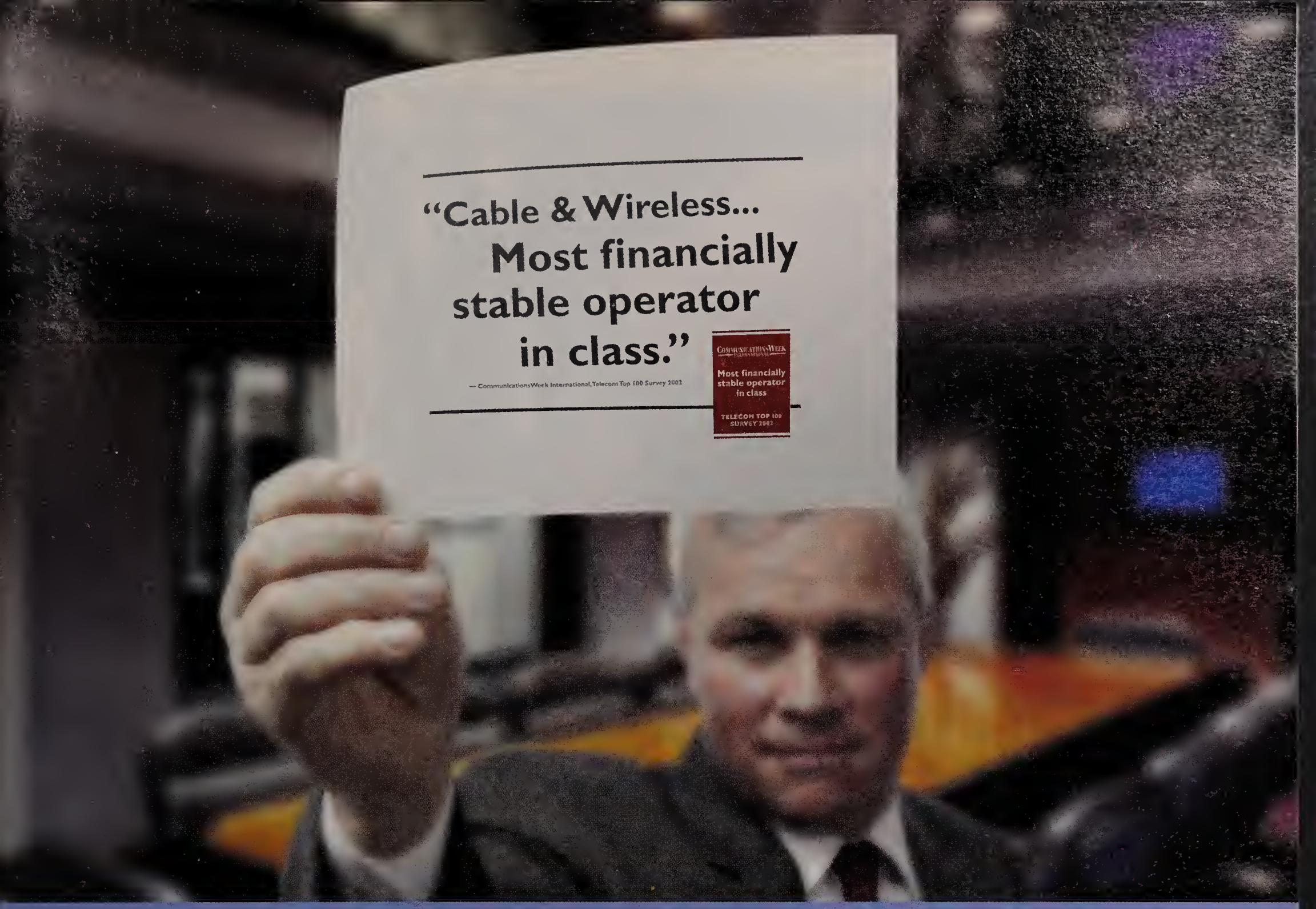

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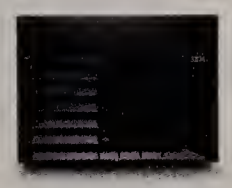

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BRIEFS

Sun Boosts Midrange Storage Capacity

Sun Microsystems Inc. released two new disk drives in a move that more than doubles the capacity of its StorEdge 3900 and 6900 midrange storage arrays. Sun said the addition of a 181GB high-density drive increases the maximum capacity of the StorEdge devices from 11TB to 29TB. The company also added a higher-performance 36GB drive.

Comdisco Set to Leave Chapter 11 Protection

Comdisco Inc. said its financial reorganization plan has been approved by a U.S. Bankruptcy Court judge and the company's creditors, paving the way for the IT services provider to emerge from Chapter 11 proceedings next week. The plan calls for Comdisco to sell off its remaining operations over the next three years. The Rosemont, Ill.-based company filed for bankruptcy protection in July 2001.

Enterasys Prepares Revenue Revision

Rochester, N.H.-based Enterasys Networks Inc. said it plans to make "significant adjustments" to the revenue for its fiscal year ended March 3, 2001, and for the following 10 months. The networking vendor, which laid off 30% of its employees and replaced three top executives in April, said the restated results should be filed in the next few weeks.

Short Takes

NASDAQ STOCK MARKET INC. in Washington delisted **WORLDCOM INC.**'s stock, effective last Tuesday. . . . **COMPUTER ASSOCIATES INTERNATIONAL INC.** said it plans to start including stock options as expenses in its financial results. . . . **IBM** announced that it will sell and support Intel-based server partitioning software developed by **VMWARE INC.** in Palo Alto, Calif.

Continued from page 1

IT Investments

year by slowing down or stopping planned initiatives and redirecting project funding faster and more effectively than it used to, said Marvin Balliet, chief financial officer for the company's global technology and services division.

Case in point: Merrill Lynch's asset management business in the U.K. ended up deferring two software development projects in March, one to develop a tool to help separate stock trades in investor portfolios and the other to create software for integrating market data about shifts in bond prices. After discovering that the firm's U.S. asset management group already had similar projects under way, the U.K. division decided to wait for those applications and redirected some of the money it was spending into other projects. That decision probably saved Merrill Lynch more than $3 million in redundant development costs, Balliet said.

Under Pressure

IT portfolio management isn't entirely new to big financial services firms such as Merrill Lynch, which have adopted the precepts from their investment banking groups. The concept has been discussed in academic circles since the 1980s and began making its way into corporate IT departments a few years ago.

But it does represent a new tack for many companies that are under intensifying cost pressures. "It's like the *Jerry Maguire* syndrome: Show me the money," said Howard Rubin, a Meta Group analyst.

Interest in IT portfolio management "is coming up a lot these days in building credibility between CIOs and CFOs," said Jeremy Grigg, an analyst at Gartner Inc. CIOs are increasingly being pushed to "look through the life of a project or program and determine when to kill" it, he added.

But relatively few companies appear to be in position to regularly measure their IT investments and decide when it's time to cut the cord. According to the research data that Meta Group released last month, 83% of the companies it surveyed said they're unable to adjust their IT budgets to fit business needs more than once or twice a year.

Using IT portfolio management techniques "allows you to do continuous monitoring of your IT investments and makes you smarter about how you spend your money," said Stephen J. Andriole, a consultant at Arlington, Mass.-based Cutter Consortium.

Another company that has adopted the IT portfolio approach is J.P. Morgan Chase, which is consolidating a series of global WANs left over from previous mergers. The three-year-plus effort has generated "substantial" IT cost savings, said Michael Poser, managing director of global product management for the Enterprise Technology Services group.

Through IT portfolio management, "we look at our investments across the gamut, at those things that we really want to retire, and those things that we want to invest in," Poser said. ◗

Management Guidance

Experienced IT executives offered the following advice to companies that plan to adopt an IT portfolio management methodology:

Don't underestimate the amount of due diligence needed to make IT portfolio management work. Assemble IT and business managers into a steering committee and have it meet monthly to review projects.

Getting a good baseline on a company's inventory of IT assets isn't easy. Consider using an automated portfolio management system to help track assets and check on project status. Vendors include ProSight Inc. in Portland, Ore., and Pacific Edge Software Inc. in Bellevue, Wash.

Allocate enough time and resources to stay on top of technology trends. But also train IT workers in maintaining an investment mind-set.

HOW IT'S DONE

For a more detailed explanation of what IT portfolio management involves, visit our IT Management Knowledge Center.

QuickLink: 27643
www.computerworld.com

Sun Pushes Compatibility

BY MATT BERGER

In a bid to prevent the Java market from fracturing, Sun Microsystems Inc. last week announced a certification and testing program designed to ensure compatibility between Java-based applications and the application server software sold by various vendors.

Sun said the new Java Verification Program offers a suite of tests and reference materials to guarantee that applications can work with application servers built to the Java 2 Enterprise Edition (J2EE) specification. But to pass the tests, it added, applications can't make use of any vendor-specific extensions to application servers.

Vendors such as IBM, BEA Systems Inc., Oracle Corp. and Sun sell J2EE-based application server tools. But some of those products include extensions that are meant to differentiate them from the pack, so an application designed for BEA's WebLogic application server can't necessarily run on IBM's WebSphere. Sun is concerned that users could be confused by the incompatibility.

Packaged applications that adhere to the certification program can sport the "Java Verified" brand and logo, said David Harrah, a Java marketing manager at Sun. ◗

Berger is a reporter for the IDG News Service.

Building an IT Portfolio Approach Starts With the Baseline

So you want to approach your IT investments as a set of portfolios, but you don't know where to start?

The best place to begin, according to IT executives who have gone through the process, is to develop a thorough baseline inventory of your IT assets, including infrastructure technologies, hardware, software, applications and personnel.

But that's easier said than done, especially for large companies that have thousands of software licenses and pieces of equipment, said Steve Sheinheit, chief technology officer at New York-based insurance firm MetLife. To help get your arms around your assets, he recommended using an automated software tool to keep track of distributed technologies.

One of the most overlooked but critical components of building an IT portfolio management methodology is making sure that technologists who will be involved in the decision-making process are trained to think "in an investment mind-set," said Brian Robbins, a vice president responsible for business and risk management in enterprise technology at MetLife.

"It takes time to get technology managers to think that way," said Robbins, who suggested that companies create portfolio management training courses and templates to help educate IT pros.

Also critical to the success of this approach is deciding who the decision-makers should be. J.P. Morgan Chase uses an "engineering board," a group of 30 executives drawn from each line of business as well as the company's IT operations.

The board meets monthly to decide on strategic IT investments, technology standards and priorities. By participating, business managers "can see the rationale for [IT investment] decisions and what the intended result is," said Michael Poser, a managing director in J.P. Morgan Chase's Enterprise Technology Services group.

– Thomas Hoffman

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Cybersecurity Czar Takes Stand on Software Quality

Urges users not to buy unsecure apps; wants government to 'create market force'

BY DAN VERTON
LAS VEGAS

PRESIDENT BUSH'S chief cybersecurity adviser last week expanded the administration's concept of corporate responsibility, warning IT vendors that it's no longer acceptable to sell glitch-riddled software and urging users to stop buying products they know aren't secure.

"The quality control obviously isn't there," said Richard Clarke, chairman of the president's Critical Infrastructure Protection Board, speaking at the annual Black Hat computer security conference. Clarke's comments were met with thunderous applause from a crowd of more than 1,500 hackers and IT security experts attending the convention, the largest in its six-year history.

The problems with software quality and security go beyond the failure of systems administrators to routinely update software with new patches, Clarke said. The patches themselves often have glitches that cause companies "unforeseen consequences," he said. As a result, many companies fall behind in patch deployment because they must first test the patches.

"Rather than reject Bill Gates' statement that he's going to make security job No. 1, I welcome it," said Clarke. "And I'm going to hold him to it."

THE ASSOCIATED PRESS

"THE QUALITY CONTROL obviously isn't there" in software releases, Richard Clarke told attendees at the Black Hat conference.

Harris Miller, president of the Information Technology Association of America in Arlington, Va., said IT vendors have been moving aggressively on "baking in" security for a long time. However, "we are never going to have perfect software, any more than we have perfect buildings or perfect cars or perfect airplanes or any perfect products designed and built by humans," Miller said.

Although Clarke blamed the government to a certain extent for allowing security awareness to founder, he also blamed cable companies, Internet service providers and telecommunications companies for providing broadband connections to users and making little or no mention of the inherent security vulnerabilities in those connections.

Tens of millions of people hook up to the Internet via broadband connections such as cable modems, but only one Internet service provider currently warns customers of the need for a firewall to protect their sensitive data, Clarke said. "I think we have to play the role of Paul Revere in waking people up," he added.

But the government may soon be doing more than that. As Clarke prepares to release on Sept. 18 the National Plan for Protecting Cyberspace, he may also expand to all federal agencies a new U.S. Department of Defense policy that requires all new IT purchases to be made from a list of independently certified product lines.

"The government buys a lot of software," said Clarke, referring to the $20 billion budgeted for government IT during the next three years. "That will create a market force that will drive security."

SECURITY GUIDELINES

There are right and wrong ways to report security vulnerabilities, say attendees at the Black Hat security conference.

QuickLink: 31840
www.computerworld.com

IT Leaders Say Bill Could Lead to Vigilantism

Proposed law gives copyright owners self-help provisions

BY PATRICK THIBODEAU
WASHINGTON

Congress is considering legislation that would give copyright holders the ability to root out pirated copies of software, music and movies and then use technology to disrupt their distribution. No court order, search warrant or badge would be needed.

And while the legislation by U.S. Rep. Howard Berman, a Los Angeles-area Democrat, is aimed at music and movie piracy over distributed networks, the bill's self-help provisions extend to all copyrighted material, including software.

Corporate networks could be affected in a number of ways. If an employee's distribution of software or music is publicly accessible, a copyright holder could launch a denial-of-service attack, potentially affecting everyone on that network, say legal and IT experts.

"It's basically a license for corporate vigilantism," said Troy Baer, a systems engineer at the Ohio Supercomputer Center in Columbus. When a copyright holder suspects that a music file is being made available on a network, he can bring that network "to [its] knees."

According to legal experts, the bill grants unprecedented power to copyright holders.

"I think this is groundbreaking, frankly, in opening up the ability of copyright holders to take matters into their own hands," said Robert J. Rini, a telecommunications attorney at Manatt, Phelps & Phillips LLP in Washington.

The bill could give software vendors a new, UCITA-like means of engaging in "self-help" by disabling or deleting illegally shared software if they include that authority in the licensing agreement, said Fred von Lohmann, senior intellectual property attorney at the Electronic Frontier Foundation in San Francisco.

The Uniform Computer Information Transactions Act (UCITA) allows for a series of default rules in software licensing contracts. This commercial law requires state-by-state adoption.

Like UCITA, the Berman bill limits the liability of the vendor or copyright holder.

Berman is the ranking Democrat on the House Intellectual Property Subcommittee, and his bill has some influential bipartisan support. It won't be acted on this year, however; Congress has recessed for the summer and has only five weeks of business remaining when it returns in September.

Berman has argued that the bill is narrowly crafted, and he compares it to the ability of satellite companies to use electronic countermeasures to prevent signal theft. A recording industry trade group praised Berman's bill as innovative.

This legislation represents part of a concerted push by copyright holders for Congress to find IT solutions to online piracy. A bill that was introduced earlier this year by Sen. Fritz Hollings (D-S.C.), chairman of the U.S. Senate Commerce Committee, would require copyright protection to be built into PCs and software.

"It's swatting flies with a nuclear weapon," Glenn Tenney, chairman of the Institute of Electrical and Electronics Engineers Inc.-USA Intellectual Property Committee, said of the latest IT bill.

The legislation will likely produce "a small cottage industry that goes in to seek and destroy copyright materials. And I think you will see a lot of misuse and accidents," said Tenney, a software developer.

Berman's Bill

HR 5011 would allow copyright holders to go after distributed, publicly accessible, peer-to-peer file-sharing systems.

THE GOAL: Give copyright owners the ability to disrupt publicly accessible peer-to-peer networks.

ALLOWS: That's unclear, but it could allow distributed denial-of-service attacks.

DOESN'T ALLOW: Sending viruses through P2P networks or hacking into personal files.

NOTIFICATION: The copyright owner must notify the U.S. Department of Justice of its attack plans seven days in advance.

Veritas to Support Linux Server Clustering

Expansion of storage management tools will include support for NAS systems

BY LUCAS MEARIAN
NEW YORK

Veritas Software Corp. last week announced a set of applications aimed at letting storage administrators cluster their Linux servers and create Linux-based network-attached storage (NAS) systems.

The Mountain View, Calif.-based storage software vendor also said it plans to introduce Linux management software to support IBM's zSeries mainframes and Oracle9i databases next year.

IBM has certified the new storage management platform on its Intel-based xSeries servers, while Dell Computer Corp. has certified its PowerEdge servers to work with the new Veritas software under service agreements it reached with the vendor.

By User Request

Mark Bregman, Veritas' executive vice president of product operations, said the company's continued expansion into the Linux space comes at the request of customers eager to have more tools to feed their growing Linux-based server farms.

One of those users is Bill Watson, systems administration manager at The Weather Channel Enterprises Inc. in Atlanta. Watson said he can now hook his Linux systems directly to the company's storage-area network (SAN).

Using a 20TB SAN to store text and video content, the Weather Channel is incrementally moving from Sun Solaris servers to Intel-based boxes running on Linux to reduce the cable station's total cost of ownership (TCO), according to Watson.

"We see the ROI coming in two different places: the initial cost of hardware, and then the support contracts," he said.

The company pays approximately $500,000 per year in support costs to Sun Microsystems Inc., Watson said. "If I can wipe it out and go to $50,000 [a year for support] on an Intel platform, that's where I'm going," he said.

Veritas said its new Cluster Server software can lower TCO by allowing commodity Intel servers to be clustered via policy-based provisioning and load-balancing techniques.

Walt Nelson, senior manager of corporate systems at Seattle-based online retailer Amazon.com Inc., said he likes Veritas' move into the Linux space because his company replaced several hundred Unix servers last year with Linux machines and is seeking more cost-effective and efficient management tools.

According to Nelson, a large part of the $17 million in hardware and software cost savings Amazon.com achieved year over year in 2001 were directly related to its Linux migration. But Nelson added that there are few Linux-based tools that feature reliable, centralized storage management with high performance.

Stephen Elliot, an analyst at Hurwitz Group Inc. in Framingham, Mass., said Veritas' inclusion of Linux should help boost corporate adoption of the open-source technology.

Veritas "is clearly ahead" of the market in supporting storage management products for Linux, Elliot pointed out. But, he added, "it's going to take time for that space to build." ◗

Linux Lift

Veritas Software began shipping Linux products last week, including the following:

ServPoint NAS on Linux: Starting at $3,000

Cluster Server: Starting at $2,000

Foundation Suite: Starting at $1,500

NetBackup DataCenter: Starting at $5,000

NetBackup BusinessServer: Starting at $1,195 per server, four clients and one tape drive

NOTE: Starting prices are for a single-CPU server.

Lawmakers Move to Make Users Share Recycling Costs

Bill would add fee to sales of PCs, monitors, laptops

BY PATRICK THIBODEAU

One of the least exciting jobs in IT management may be disposing of old PCs, servers and other technology equipment. But it's a job that's getting a lot of attention from federal and state lawmakers concerned about high-tech waste.

Just as Congress was wrapping up work for the summer last month, U.S. Rep. Mike Thompson (D-Calif.) introduced federal legislation that would impose a maximum $10 fee on the sale of a desktop PC, laptop or monitor to help pay for new recycling centers.

A similar recycling fee plan is pending in the California legislature. Indeed, the Electronic Industries Alliance, an Arlington, Va.-based trade group that represents makers of PCs and other high-tech equipment, said technology recycling bills have been introduced in 24 states, most of which call for the formation of committees to examine the issue.

Thompson said he has no expectation that his bill will pass this year. But he added that he wants to start a debate on how to safely dispose of PCs and monitors that include hazardous materials such as lead, mercury and polyvinyl chloride plastics.

Most large U.S. companies currently contract with PC disposal services that are run by hardware vendors or specialized waste disposal companies.

Disposal fees average $25 to $50 per PC, according to industry officials. That includes the cost of erasing data and for packaging and shipping the systems, plus administrative expenses. Fees may also depend on the prices that used PCs can fetch in aftermarket sales.

For instance, PCdisposal.com LLC in Olathe, Kan., charges companies disposal fees of $35 per PC. Resales can lead to rebates, said Kory Bostwick, the company's president.

But resale prices are in a continuing state of flux. At one time, there were incentives for companies to resell systems after using them for the typical life cycle of three years, said Jim Tudor, who manages PC procurement at Alltel Corp. in Little Rock, Ark. Alltel, a $7.5 billion telecommunications and wireless services provider, has about 26,000 PCs.

But Tudor said he's now seeing a sharp drop in resale prices at the end of one and two years, partly due to rapid increases in processing power. That reduces the opportunity to get a good resale price after three years, he said.

At the same time, the life cycle of PCs is extending to four years at many companies, said analysts at Gartner Inc. in Stamford, Conn., and IDC in Framingham, Mass. They cited the economic downturn as a major contributing factor.

Some IT managers said they also don't feel as much pressure to rapidly upgrade their hardware in order to keep up with new software releases.

"I do think we're entering a period of diminishing returns on the successive generations of the software," said Jim Prevo, CIO at Green Mountain Coffee Roasters Inc. in Waterbury, Vt. "As we start to slow down the upgrades of the software, we will likely slow down PC replacement."

Ethical and environmental issues are also part of the looming debate over technology recycling. Thompson criticized shipments of used PCs overseas and argued that the U.S. is exporting its environmental problems.

But Robert Houghton, president of high-tech equipment recycler Redemtech Inc. in Hilliard, Ohio, said used PCs are often put to productive use in other countries. "If they weren't able to have access to that much-less-expensive technology, they wouldn't have any," he said. ◗

A Problem That Can't Be Buried

THE NUMBERS: In April, consulting firm Gartner said the 1 billionth PC had been sold. It took 25 years to get to that level, but Gartner said the 2 billion mark may be reached by 2008.

PLANS: Some state and federal lawmakers are considering applying an upfront fee, much like a tax, to PC and monitor sales to help fund recycling programs.

AN ALTERNATE APPROACH: The European Union is considering a proposal that would require vendors to dispose of the systems they sell.

EYE ON WASHINGTON

Q&A: Rep. Mike Thompson discusses why he introduced recycling fee legislation.
QuickLink: 31717

Government Watch: For more coverage of government policy issues related to IT, visit our Web site.
QuickLink: s1300
www.computerworld.com

Former Microsoft President To Become Quantum's CEO

BY MARTYN WILLIAMS

Richard Belluzzo, who stepped down May 1 as president and chief operating officer at Microsoft Corp., will take over as CEO of data storage systems company Quantum Corp. on Sept. 3.

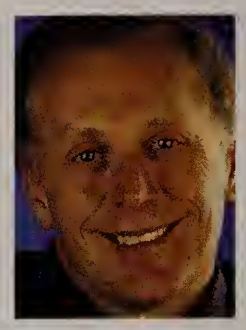
Belluzzo, also a former executive at Hewlett-Packard Co. and Silicon Graphics Inc., will replace outgoing CEO Michael Brown, Quantum said.

Belluzzo's new job will start days after he formally ends a three-year stint at Microsoft, where he joined its consumer group as vice president and most recently served as president and chief operating officer. He gave up those jobs as part of a broad reorganization that gives increased autonomy to the executives in charge of Microsoft's product groups. [QuickLink: 28694].

In an interview after his resignation from Microsoft was announced, Belluzzo said that he wanted to be in a position to build a business and that the role of CEO best suited his goals [QuickLink: 31806].

Credited with being the force behind the growth of .Net, Xbox and Microsoft Network efforts, Belluzzo joins Milpitas, Calif.-based Quantum as its revenue is declining and losses are increasing. For its last fiscal year, Quantum reported a 22% drop in revenue year over year to $1.1 billion and a 74% drop in net income to $42.5 million.

Its current financial health, as measured by its first-quarter report delivered a week ago, isn't much brighter. Quantum announced a net loss of $131 million on revenue of $211 million, below the $230 million to $245 million revenue forecast the company issued in late April.



RICK BELLUZZO hopes to build Quantum's business in CEO role.

The lower-than-expected figures were preceded by a warning that the company would miss its target — the second consecutive quarter Quantum was forced to issue such an announcement.

Prior to working at Microsoft, Belluzzo was chairman and CEO of Mountain View, Calif.-based Silicon Graphics and worked for 20 years at HP, where he led the company's computer products division.

Williams is a reporter for the IDG News Service.

Continued from page 1

Windows 2000

products from vendors such as Dell Computer Corp. and EMC Corp. — that has been lab-tested to work with Windows 2000. Two versions were announced, joining a pair of earlier guides that Microsoft developed on its own and quietly released in January (see box).

But some IT managers have mixed feelings about the program. "Conceptually, I think it has some merit," said Jon Dell'Antonia, vice president of information systems at children's clothier OshKosh B'Gosh Inc. in Oshkosh, Wis. "But what if I don't want to do business with one of those vendors?"

Dell'Antonia said he has nothing against Microsoft's listed partners. However, he said he doesn't currently deal with many of them and is more likely to stick with vendors with which he already has a relationship.

"If I had a true architecture guide or plan, I think that would be useful — but not a canned solution," said Bill Finefield, CIO at the Navy Exchange Service Command in Virginia Beach, Va.

Other Options Available

MSA lead product manager Don Thompson said companies can make product substitutions and then use the prescribed guidelines as a baseline for performance expectations. "When they swap out what we did for some of what they have, they can judge the effect of doing that," he said.

But Al Gillen, an analyst at IDC in Framingham, Mass., said users who deviate from the guidelines "won't get the promises of reliability and performance they're offering."

"It all comes down to a pretested configuration that's known to be stable and reliable, and that's what the guideline is trying to accomplish," he said.

PRESCRIBED VENDORS

Windows-Based Prescriptive Architecture Guides

Microsoft-developed guides, released in January:

- Hewlett-Packard Co./Compaq Computer Corp.: Hardware
- EMC Corp.: Storage
- Cisco Systems Inc. or Nortel Networks Ltd.: Networking

Partner-led guides, released last week:

- Avanade Inc.: Systems integrator
- Dell Computer Corp.: Hardware
- Unisys Corp.: Hardware*
- EMC: Storage
- Brocade Communications Systems Inc.: Storage switches
- Emulex Corp.: Storage networking host bus adapters
- Nortel: Networking

* Included In only one of two partner-led guides

Companies that stray from the prescribed guidelines may seek help to achieve the desired results. For example, one of Microsoft's reference accounts, Learning Station Inc. in Charlotte, N.C., didn't use all of the prescribed products from any of the guides that are now available, in part because the guides hadn't been released when it started a Windows 2000 data center project last year.

But Learning Station CEO Craig Larsen said the company and its primary IT services provider, Ensynch Inc. in Phoenix, did call on Microsoft Consulting Services to do a "gap analysis" of the technology pieces that would need to be added to its installation to meet a goal of 99.9% uptime. That availability level is required under a contract Learning Station has for providing a virtual education desktop to Arizona public school students and teachers.

In order for Microsoft's vendor partners to carry the "MSA-qualified" logo, they must test and document their implementations of Microsoft's generic blueprint and have support and service packages ready to go with them, according to Thompson.

The documentation is provided free of charge, and customers can then buy the products, support and services from the individual vendors. To help them get started, users receive guidelines and a bill of materials listing the pieces they will need for their projects, Thompson said.

"The prescriptive architecture guideline then becomes the cookbook for putting all the technologies together," Thompson said. He estimated that a company could complete a full implementation in two to three days, once the products arrive at the loading dock.

Third Service Pack Update for Windows 2000 Now Available

Microsoft last week released the third set of bug fixes and security updates for its Windows 2000 desktop and server operating systems.

The software vendor said that in many ways, Service Pack 3 (SP3) is a traditional collection of updates, featuring all of the security fixes released since the last service pack was issued in May 2001, as well as enhancements meant to improve the operating system's reliability and application compatibility.

But the 125MB SP3 also contains some atypical elements, including a pop-up screen that lets users select the default settings for the Web browser, media player and other "middleware" programs they want to install, said Charmaine Gravning, a Windows product manager at Microsoft. Microsoft implemented that feature in response to the proposed antitrust consent decree it signed with the U.S. Department of Justice.

Gravning said users have the option of using the pop-up screen to select Microsoft products, non-Microsoft ones or a combination of the two.

Another new twist to SP3 is security fixes and improvements that were triggered by an extensive code review Microsoft did as part of its Trustworthy Computing initiative. Microsoft shut down Windows production for 10 weeks earlier this year while software engineers reviewed the code to address potential security issues.

Also new in SP3 is Application Compatibility Toolkit 2.5, a set of tools and documents that can help IT managers and application developers get their custom-built applications to run on Windows 2000. Windows XP, Microsoft's latest desktop operating system, already supports that feature.

SP3 marks the largest service pack for Windows 2000 to date. The first service pack was 87MB, and the second was 101MB, Gravning said. Users who don't have the bandwidth to download SP3 can request a CD that comes with a shipping charge of $14.95, she said.

– Carol Sliwa

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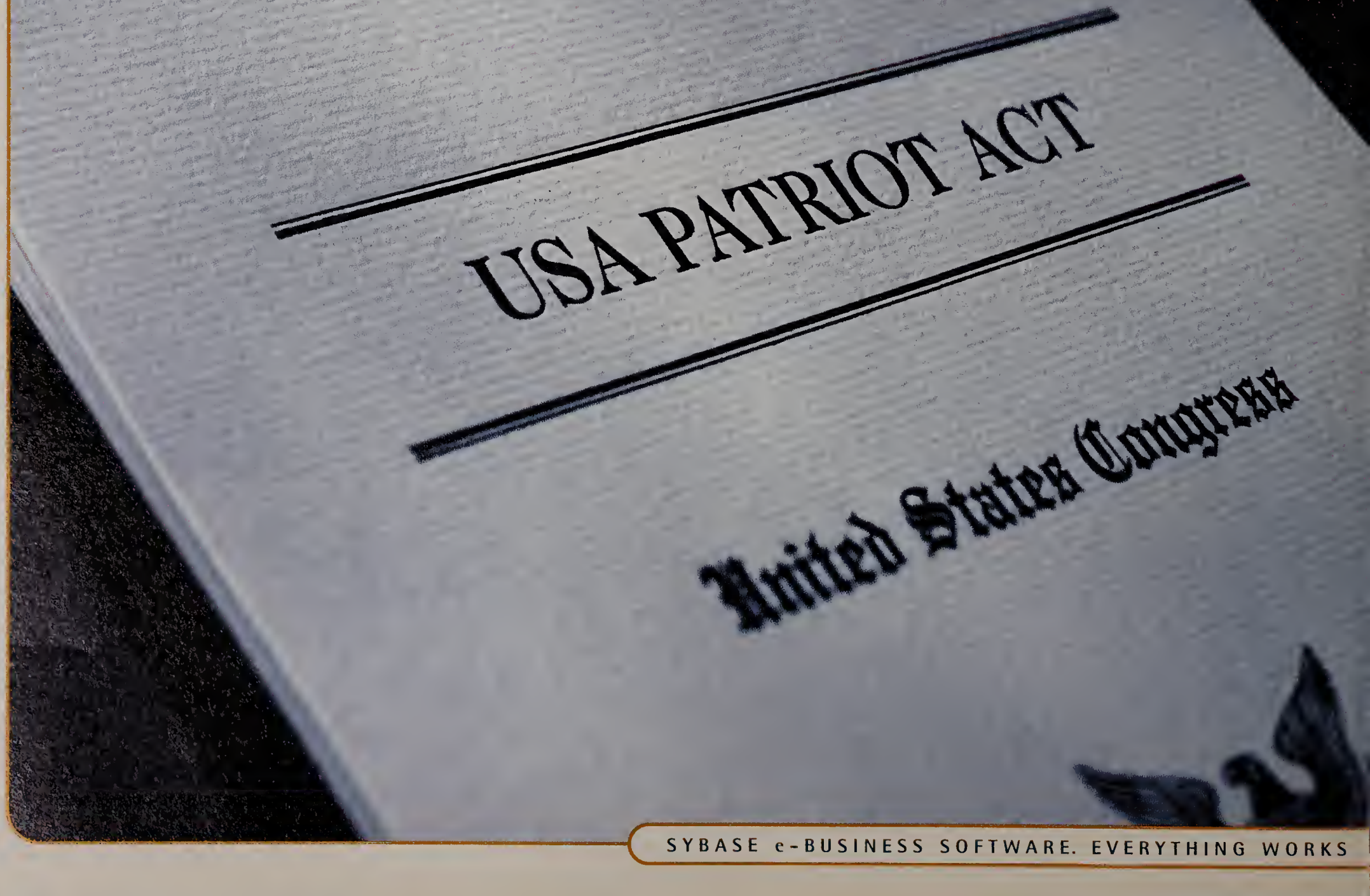

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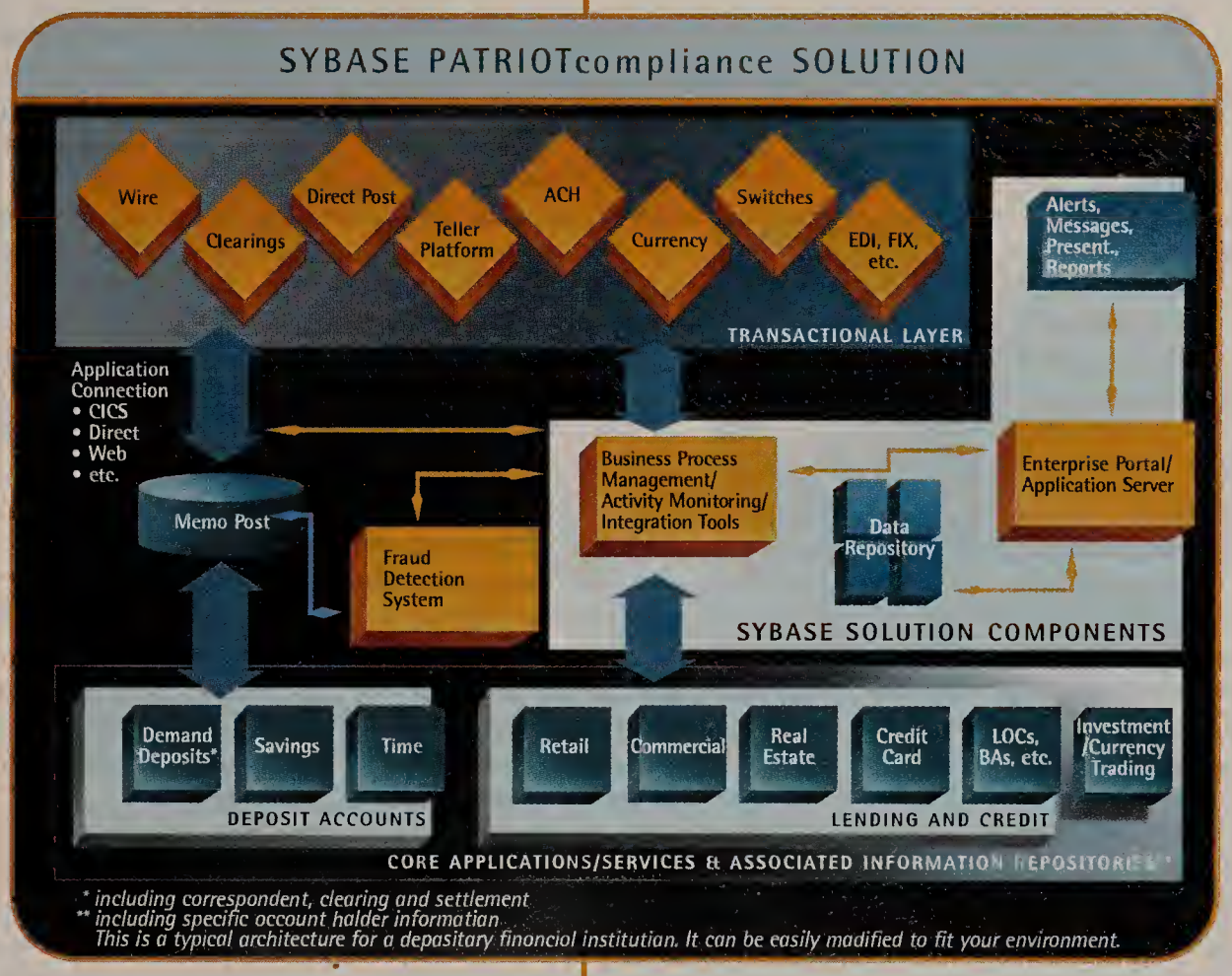

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PATRICIA KEEFE

Software Insecurity

RICHARD CLARKE, President Bush's special adviser on cyberspace, tried to put a scare into several high-tech sectors last week. But unless he also lights a fire under IT, Clarke will fail.

PATRICIA KEEFE is editorial director at *Computerworld*. You can contact her at **patricia_keefe@computerworld.com.**

Speaking at the Black Hat hacker conference in Las Vegas, Clarke issued one of his strongest warnings yet to developers. "It is no longer acceptable that we can buy software . . . that is filled with glitches," he said. "It is no longer acceptable that the number of vulnerabilities is going up."

Unfortunately, the "unacceptable" has been very accepted for quite some time. The notion that dribbleware is the norm, that fixes come in Version 2.0, and that hackable software is the tradeoff for on-time delivery has insinuated itself into the IT psyche. Consequently, neither quality nor security has been a top priority for vendors.

The cost of this tolerance is enormous. A landmark federal study on software quality released in early July put the price at a staggering $59.5 billion a year. Two-thirds of that cost — 64% — is borne by users, according to the report by the National Institute of Standards and Technology (NIST).

Clarke's suggestion that IT should just stop buying software that doesn't work properly or is unsecure isn't realistic. He might as well tell you to just say no to most, if not virtually all, of the software on the market. If only it were that simple.

Most of you don't have the luxury of spurning imperfect software. You have projects to complete and new systems to implement. You aren't equipped to build everything you need in-house. So you suck up the bad software, fix what you can and devote countless hours to installing patches. You need help breaking out of this endless loop.

The government appears to be trying. For example, last week the Pentagon said it will ban most if not all wireless devices within military installations. Moreover, Clarke wants to expand government-wide the Defense Department's new policy of buying only from vendors that have been independently certified by NIST. Last January, a report by the National Academy of Sciences pushed the idea of legislation that would hold software vendors liable for security breaches. In the meantime, IT managers should stop standing on the sidelines.

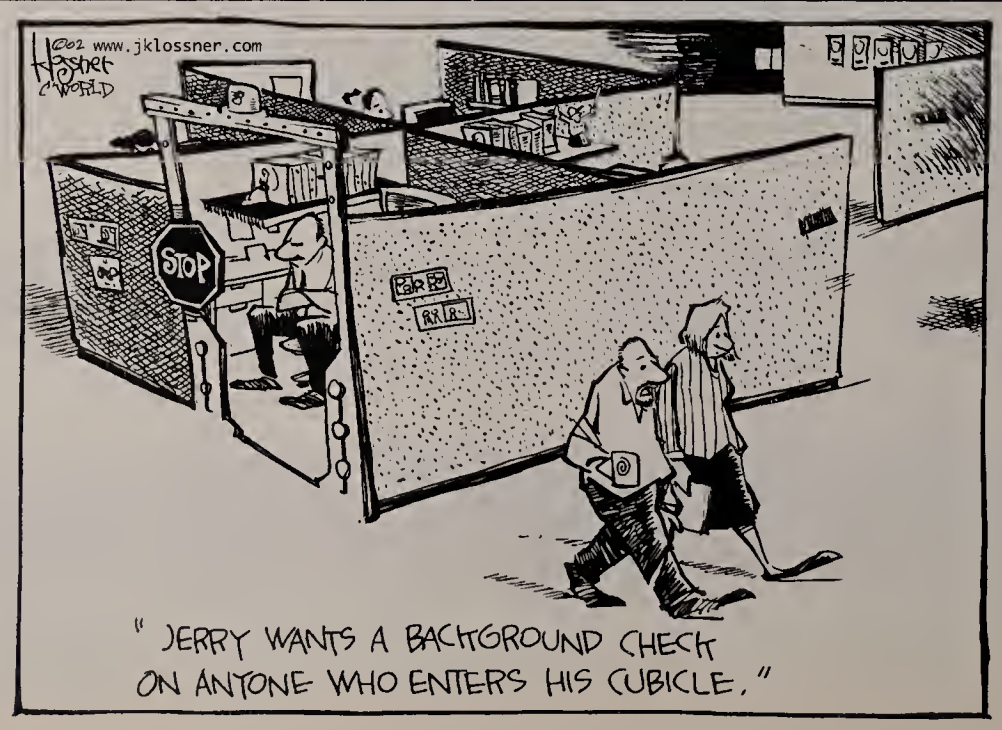
For starters, talk up these certification policies and legislative penalties with your peers and urge IT organizations and user groups to take a public stand, much like some did against the UCITA licensing legislation. Spread the word when shoddy software causes you problems and costs you money. In today's hypersensitive, trust-depleted environment, there is value in public shaming.

Consider joining groups like Carnegie Mellon University's Sustainable Computing Consortium, whose open membership plans to provide research, tools and best practices. Chalk up the $25,000 membership dues as a hedge against future losses. Take advantage of the tips, standards and programs offered by organizations like the Software Engineering Institute, also out of Carnegie Mellon. Check out the SANS Institute as well — it's got a wealth of information and isn't afraid to speak out.

Sit down with your strategic vendors and work quality issues into contracts. Follow through if they fail to live up to your expectations — with fines, cancellations, lawsuits — and really put some teeth behind your demands.

Clarke is on the right path of an increasingly popular cause. Software quality and safety should be vociferously demanded across our industry and throughout the business and consumer worlds, or nothing will change. But quality changes have to start with IT organizations deciding they will no longer subsidize poor programming.

It's time to stand up and make your voice heard. Light a fire! ◗



PIMM FOX

Tools Gain IT New Respect

CORPORATE IT is the ultimate service work department. You build something, and someone else inside the organization or a partner uses it to do his business.

IT also gets the pleasure of running systems that are in constant upgrade mode. It's taxed by multiple requests from far-flung company divisions. It runs a beleaguered help desk and is responsible for one-off projects. Oh, and then there's daily maintenance.

Getting a grip on IT's mandate can require a new set of automated demand-management tools, which can also give you a firmer grasp on cost control.

PIMM FOX is a freelance writer in San Francisco. Contact him at **pimmfox@pacbell.net.**

Bob Moore, vice president of IT at PaeTec Communications Inc., a Fairport, N.Y.-based telecommunications company, says he hasn't had to hire additional IT staff even though PaeTec grew 50% last year. "We did $127 million in sales last year, and this year we're at about $300 million," Moore says of the privately held company. "We haven't increased the size of the staff at all."

Cute trick. How'd he do it? Using the concept of workflow automation coupled with demand-management techniques, PaeTec IT executives know how long it takes for a specific IT group to pick up a request. Moore follows IT projects from a dashboard and sees the bottlenecks.

Equally important, Moore gives stakeholders direct access to the status of their projects. "My internal customers track their requests," he says.

Using software from Sunnyvale, Calif.-based Kintana Inc., Moore can combine trouble tickets with a wizard front end to determine if a problem needs to be escalated and where it ought to go. "We automatically route tickets to areas such as support, SAN

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storage and engineering," he says.

Moore sees what's coming in the door and views metrics to compare results on different types of requests. He says it's possible to see where the IT department is in the process of responding to a request and to install patches automatically for problems already fixed.

For example, using the workflow model during a software development project, Moore can have the engine automatically check changes in source control and push the appropriate changes to production. In addition, the software dashboard reaches into areas such as HR to see how job changes might affect an IT project's schedule.

"There are no silos in our IT operation," says Moore. "My customers go in and look at the projects or areas they're responsible for."

One of the biggest changes is the enhanced reputation of IT at PaeTec.

"People trust IT requests are getting taken care of," he says. "And we avoid e-mails and phone calls for updates."

Perhaps that's the best testament of a successful service. ◗

THORNTON MAY

IT Auditors Can Be Heroes

IF WE ARE to emerge from the nuclear winter of slashed and frozen IT budgets, the industry needs a new kind of hero. Not someone high tech, certainly not high hype, most definitely high trust. Let me put forward a candidate, the heretofore unheralded and underappreciated IT auditor.

But jump-starting this economy's "trust engine" is going to be very difficult. The cupboard for heroes is pretty bare. WorldCom's boss, Bernard Ebbers, turned CEOs into a motley crew of suspects. Andersen shot the public accounting profession through the heart. Brokers and investment bankers have proved themselves to be self-serving weasels. Even sports heroes are as likely to have their faces appear on wanted posters as on cereal boxes.

As a psychographer, I study the mental geography of business leaders and what they're thinking and why. Let me tell you, their world is as bleak as it's ever been. These days, executives everywhere are wondering, "Who can I trust? And what do I have to do to be trusted?"

Well, a good place for them to start is with the senior IT executive, especially one who relies on strong IT audits. Combined with a detailed audit strategy, the assurances of an IT auditor will enable the CIO to say with confidence, "We deliver on all our commitments — on time, on budget and at specification."

THORNTON MAY is a longtime industry observer, management consultant and commentator. Contact him at **thorntonamay@aol.com.**

In other words, the systems that deliver the information an executive needs to act on are working properly and capable of supporting the changes necessary to meet initiatives to restore corporate trust. The IT auditor can also warn executives when systems fall short of desired goals and possibly lay out a path to reach them.

When the U.S. and what was then the Soviet Union were negotiating a strategic weapons reduction, Ronald Reagan was fond of saying, "Trust, but verify." The IT auditor serves as the verification mechanism that will let senior management, investors and customers sleep better at night.

Most executives are profoundly ignorant about IT auditors and audit programs. In an increasingly digitized economy, the IT auditor needs to become much more visible. The days of plausible deniability about access to relevant data are behind us.

The first step on the path to building a trust-based IT organization is to inventory the auditing resource. Who are your IT auditors? How many of them are there? How much do they cost? What skills do they possess? What do they do? What value do they add? How should they be measured? How are they perceived? What have been their big wins in the enterprise? What have been their major setbacks?

With this information in hand, you can begin to rebrand the IT audit function in the minds of the corporation, the relevant regulators, the investment community and the customer base. Having a world-class IT audit function is an overlooked source of competitive advantage in a trust-challenged economy.

So drop by your IT auditor's office and get his advice. You can trust him. ◗

READERS' LETTERS

Bad H-1B Medicine

IN HIS COLLUMN "H-IB Is Just Another Gov't. Subsidy," Paul Donnelly notes the incongruity of massive layoffs in the IT industry while the industry continues to pressure Congress for high levels of foreign "temporary" workers [QuickLink: 31340]. But his solution of offering instant green cards to new arrivals instead of the H-IB visa is in itself incongruous.

Laid-off Americans won't be invited back to work if industry can look to a perpetual fountain of younger and therefore cheaper foreign workers. Nor will working Americans see wages rise in the face of this greater competition. The fundamentals — supply and demand, age discrimination, cheaper labor — all make Donnelly's prescription as bad as the current medicine he decries. The H-IB program needs to be scuttled, not replaced with another equally harmful scheme.

Tim Aaronson
El Cerrito, Calif.

DONNELLY couldn't have said it better. The H-IB program, started to compensate for a "shortfall" of IT workers in the US., has served as a conduit for cheap labor who oftentimes are required to work arduous hours. Having come through the system a few years ago, and being a permanent resident, I empathize with the people who slave for a pittance. However, with the current economic situation, there are numerous U.S. citizens and green-card holders who are out of a job. There's a surplus of IT labor in the U.S., so Congress should terminate the H-IB visas immediately and reinstate them only when the U.S. has exhausted all its existing supply of IT labor.

Gopal Venkatasubramanian
New York

Open-Source Proofing

KUDOS TO Frank Hayes [QuickLink: 31283] for 'fessing up to his mistake of exchanging *millions* for *billions* in a column. He noted that the error escaped him and his editors and was only caught by readers. That inadvertently makes the case for open source, where millions of eyes review the source code. Unfortunately, that's not where Hayes took the article, but his plea to get users more involved in coding also makes the case for open source. The end user is able to make ease-of-use changes to the source code and return improvements to the software community for scrutiny.

Robert A. Belcher
MIS manager
Tinley Park, Ill.

Counter Arguments

IN HIS JULY 15 LETTER [QuickLink: 31188], Alan Mercer says that "if a vendor changes source code to correct a security hole, it's responsible for any problems created." But as I read license agreements, vendors are absolved from all liability. He also says that "in-house modification requires considerable resources to maintain and document code changes." But any company using proprietary software has to maintain documentation on all patches and set up a test facility to verify that the patches won't break something else. As for his contention that "while open source isn't attacked as often as Microsoft systems, that will change when it becomes as common as Microsoft products," I seem to recall that on a number-of-servers basis, Microsoft was attacked more than open source by a margin of over 5 to 1.

Charles J. Lingo
Denham Springs, La.

Not So Extreme

THERE'S NOTHING extreme — or really new — about extreme project management [QuickLink: 31175]. Great tools for stakeholder management, scope management, quality management and more already exist in the nonprofit Project Management Institute's body of knowledge. IT leaders who want to run more successful projects should have project managers train to use PMI's remarkable tool kit and hire project managers who have earned PMI's Project Management Professional certification, the de facto standard for project management competence.

Jack Davis
CEO, Knowledge Movers Inc.
New York

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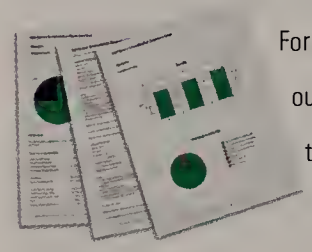

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THIS WEEK

PRESERVING HISTORY

In many organizations, Web site content is disappearing into oblivion, and the lack of a record can lead to legal, regulatory and business continuity problems. Companies are looking for technologies to help archive their sites. **PAGE 26**

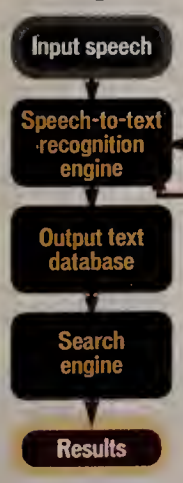
FUTURE WATCH

The major database vendors are inventing technology to optimize performance, minimize administration and unite distributed, heterogeneous information. **PAGE 30**

QUICKSTUDY

Open-source technology has changed the competitive landscape of the software industry. But like any business, open source has its own thorny world of contracts, legalese and licenses. **PAGE 32**

EMERGING TECHNOLOGIES



Improvements in voice-recognition technology are making it possible to search spoken-word files. **PAGE 34**

SECURITY JOURNAL

Certification courses are criticized for testing only high-level knowledge, but a recent SANS Institute class kept Mathias Thurman on his toes by combining practical, hands-on intrusion-detection system training with a rapid pace. **PAGE 36**

NICHOLAS PETRELEY

Kick-Starting the Web

I'M GETTING TIRED OF WAITING for the Web economy to restart, so I'm going to offer two suggestions to give it a kick in the pants.

One of the many reasons the dot-com bubble burst is that there are so few ways to fund a Web service. You can adopt a subscription model and make users pay to reach the content, but that approach flops more often than not. Or you can make the content free and support the site through advertising, but most vendors have little incentive to advertise on the Web.

Web ads are a disaster because they're inferior to ads in just about every other medium. Web ads are easy to block, and they're easy to ignore when you don't block them. It doesn't matter where you put them on a Web page, and it matters even less how much color or animation you put in the ad.

In my experience, the only Internet ads that have ever made a lasting impression were ads that ran throughout an Internet game I played called Acrophobia. I haven't played for many years, but I remember every ad. The ads ran between sessions of the game. You couldn't block them. There was no fast-forward button to get past them. The ads typically ran for only a few seconds, so the interruptions in the game were short enough to be tolerable. The multimedia nature of the ads made some of them entertaining, and all of them them were hard to forget.

So my first suggestion is to bring this concept to Web browsing. It should be easy. Web sites already split up many articles into multiple pages. When a reader clicks on the Next button, the site could make him sit through a few seconds of advertising before the next page of the article appears. The technical challenges to make this work certainly aren't insurmountable. To compensate for slow connections, you could stream a multimedia ad to the browser while the user reads a page of the article.

You could also build a delay into serving up a page when someone hits the Next button so that the reader would have to wait a few seconds between pages. This would take away the incentive to block the ads or turn off the multimedia features necessary to view and hear them. If I had no choice but to twiddle my thumbs for six seconds between pages, I'd rather watch an ad while I waited than watch a blank screen.

I'm sure many of you will bristle at the above suggestion, but I believe this is the way to make Web ads not only worth the investment, but also worth more than television advertising, which is becoming easier to avoid all the time. So if you hate this idea, remind yourself that if the Web is where advertising works, then the Web is where the money will go.

My next suggestion may be more difficult to implement from a technological perspective, but it could be a very lucrative approach to collecting marketing data. It would require a bit of legislation in addition to technology, but that shouldn't be a problem.

It's easiest to explain this idea through a fictitious example. Imagine that when you put a bag of popcorn into your microwave oven, a chip inside the bag tells the GE oven the brand, flavor and other details about the popcorn. The machine then automatically uses the ideal settings to pop the corn, which benefits the customer. Meanwhile, the oven sends everything it knows about this corn-popping event to a central database repository at GE. When the packets hit the router, the router checks to see if the microwave oven ID contained in the packet is valid and paid for by GE. If not, the packet is discarded. If so, the router is legally required to strip the packet of any information that could be used to identify the customer, after which it passes the information to the GE database. GE can then sell its demographic information to others.

The bottom line is that companies pay to collect information about what customers do, the privacy of the customers is protected by technology and by law, and the information collected is still valuable enough to sell. ◗

NICHOLAS PETRELEY is a computer consultant and author in Hayward, Calif. He can be reached at nicholas@petreley.com.

PRESERVING Web Hist

The technical challenges of Web site archiving make it difficult for companies to maintain the records of past activities and transactions that are needed for legal and regulatory reasons.

By Robert L. Mitchell

MICHAEL MORGENSTERN

WITH 60 WEB SITES, 20,000 Web pages and approximately 100 page changes per month to manage, you would think that Chris Strout wouldn't dwell on the past. But Strout, Web site manager at Chicago-based insurance brokerage Aon Corp., says that preserving historical Web site information is critical to meeting his company's regulatory obligations.

"We've had some compliance issues with the SEC where they've said, 'Information we're looking for is not on the site. Where is it? Has it been on the site in the past?' " he says. Using TeamSite, a content management tool from Sunnyvale, Calif.-based Interwoven Inc., Strout says, he can show where the requested content appeared at a given time — and how users navigated to it.

Regulatory compliance is just one reason to maintain access to historical Web site information, corporate archivists say. Information in Web archives can also provide critical evidence to protect a company in legal matters, or allow the marketing department to look back at previous online marketing efforts to see how the company presented itself and its products over time.

Unfortunately, in many organizations, Web site content — including the original context, look and feel — is disappearing into oblivion.

"This could be a period that is relatively undocumented, given the amount of information that's out there," laments Bruce Bruemmer, corporate archivist at Cargill Inc. in Wayzata, Minn. "We're going to just lose a lot of information."

Part of the problem is complexity: How do you archive continually changing Web sites with thousands of pages that include active content and dynamically generated page elements? Many organizations avoid that question and just try to get the basics. A simple tool like Adobe Systems Inc.'s Acrobat can encapsulate static Web page content and maintain active hyperlinks within searchable Portable Document Format (PDF) images. On the high end, content management tools from companies such as Pleasanton, Calif.-based Documentum Inc. can provide more detailed snapshots of previous Web site content. Interwoven's TeamSite virtualization engine can even re-create historical applieation servers, JavaServer Pages, Extensible Style Language style sheets and other code. But IT must weigh the cost of such systems, which can easily run into six figures.

Getting the Basics

Bruemmer takes a piecemeal approach to archiving. "Right now, I'm in the sticks and stones era," he says. "If there's Web content I want to capture, I'll capture it and move it off-line on CD-ROMs as PDFs."

He recommends establishing policies for determining what content should be archived and for how long. But applying such policies is difficult because, like many companies, Cargill has different groups managing its many Web sites. "That sort of stymies a uniform approach to capturing the Web sites," he says.

Becky Haglund-Tousey, archives manager at Northfield Ill.-based Kraft Foods Inc., began thinking about Web site archiving in 1996, with the launch of the Kraft Kitchen interactive Web site. "Once we moved to the Web age, a lot of records were no longer created in hard copy, so we have to deal with

Coping With Web Obsolesence

For corporate archivists, the Web brings a new kind of planned obsolescence. Where manufacturers were once accused of designing products that wore out too quickly in order to sell more of everything from new cars to washing machines, it's now the rapidly changing technological underpinnings of Web sites that threaten to render archival information unusable.

"Are we going to know what a TIFF file is in 20 years?" asks Darrell Delahoussaye, manager of collaborative systems at San Francisco-based Bechtel Corp. In addition, vendor-controlled file formats such as PDF, Flash and Windows Media could evolve in ways that may force time-consuming conversions of older files to maintain readability.

"Not only are the formats changing," adds IDC's Susan Feldman, "but [so are] the platforms on which they run." That includes everything from JavaScripts to the Web server software and hardware that a site runs on.

"At some point, you hit the roadblock of, Do I maintain all the components or make the transfer to a new environment?" says Delahoussaye. That expense is likely to force hard choices, so it's important to appraise what's important, he says.

Delahoussaye has been down that road before, with word processing documents that migrated from Wang format to WordPerfect and finally to Word. While the text was preserved, he says, some things probably got lost in the translation. But for important content, he says, companies may have no choice but to convert files.

– Robert L. Mitchell

them in this format," she says. She doesn't rely on administrators to archive Kraft's 40 to 50 product-specific Web sites, which include Jell-o.com and Nabisco.com. Instead, two employees use Adobe Acrobat to create quarterly PDF images of the static Web site content, and Haglund-Tousey stores those images on CD-ROMs. The process is time-intensive, she says, so she limits PDF captures to the first three levels of the Web site. "We don't capture down to every level, because [then] you're capturing a lot of redundant information," she says.

Acrobat converts text, page links and some graphics but will only reference Flash, Java or dynamically generated content, which must be stored separately. "I would like to have a product that would capture application-driven and interactive elements," acknowledges Haglund-Tousey. But for now, she says, PDFs capture enough of the look and feel of the original Web site.

Acrobat allows searching across PDFs for embedded content. It uses a format called extensible metadata platform, or XMP, to embed basic metadata elements, such as the creator's name and the creation date, with each file. Acrobat also supports XMP extensions to allow user-defined fields, although Kraft doesn't use this function. (An Adobe spokesperson acknowledges that the way to apply extensions in the product is "not obvious" and says the company is working to correct that.)

Haglund-Tousey considered more sophisticated — and expensive — content management systems before settling on a $249 version of Acrobat. However, she says, her main concern wasn't price. "A lot of the content management software packages out there aren't designed for long-term preservation of site content," she says.

Going for Broke

Strout sees things differently. Aon, a $7 billion insurance brokerage firm, was forced into thinking through content management issues in order to comply with regulatory disclosure rules that require some Web content to be preserved for up to seven years. Interwoven's TeamSite provides access to archival Web content as a logical extension to the content creation and management process.

The system allows Aon to apply metadata tags that describe content in detail as it creates and maintains more than 20,000 pages. As pages move off the live sites, they're still available on a staging server, where TeamSite's virtualization engine allows system users to view previous Web site content. Strout uses TeamSite to take a snapshot of the Web sites four times per day. "At the click of a button, we're able to go back a year," Strout says. Well, almost. Aon stores the underlying content and its Web page design properties separately. "It takes some work to marry those together," he says.

Strout acknowledges that a copy of Acrobat is considerably less expensive than a content management system. But he sees PDFs as inadequate. "Having a snapshot of the site allows us to re-create not just the content but also the user experience, and that sometimes is more important," he says.

Direct access to the archive is limited, however. Of Aon's 53,000 employees, only about 100 need access to the system. Thirty people have direct access; others must make requests. "We can send them a virtual link, and they can view that," Strout says.

Strout also claims that vendor lock-in isn't an issue because Aon's Web site metadata is stored in properties files built using XML. "If we had to, we could take it out of Interwoven," he says.

Still, the rapid obsolescence of Web application software and file formats leaves some people wondering how well these tools will work in the long term. "I don't know that [the content management vendors] have addressed the 10-year problem, as opposed to the two-year problem," says Susan Feldman, an analyst at Framingham, Mass.-based IDC, adding that, over time, scalability may also become an issue.

But given the rapid pace of change in Web site content, Haglund-Tousey doesn't think companies can wait for a perfect solution. She says that while she'd like to have a system that would capture all Web site content, PDFs capture the basics, and "we're able to do that now." ◗

Web Archiving From the Ground Up

CASE STUDY

Customers of Corporate Express Inc. who want to review their billing histories can do so by logging into the office products vendor's Web site. The experience of developing a content management system that could deliver those documents on the Web has helped the company refine its archiving strategy for other parts of its Web site as well, says Wayne Aiello, vice president of e-business services at Broomfield, Colo.-based Corporate Express.

"Archiving is very important because it allows us to keep a history of what we have done on this site, both text and graphical," he explains.

The company's Web site archive, developed using Documentum 4i eContent Server software, captures the look and feel of archived Web pages, although it's not the same as surfing the original Web site, Aiello says. The archive "is not a dynamically linked Web site. You have to step yourself through that," he says. And since hot links don't work, Aiello embeds notes on archived Web pages that appear, "kind of like sticky notes, where a link to another page is not obvious."

The system captures only static content, however. The dynamic, database-driven pages used for the e-commerce parts of the Web site are impossible to capture in a Web page context, Aiello says.

Also, the number of licensed Documentum users is limited, so other employees who want to view historical Web pages typically must make requests. "We publish more frequently requested information to the intranet," he says.

Aiello says that the Web site content and the metatags Documentum uses to describe Web page information can be exported if Corporate Express ever needs to move off of the 4i eContent Server. He says he would like to see that information stored in XML – the format Corporate Express used to store its billing data. "XML is a standard that attempts to transcend any vendor's proprietary format," Aiello says.

Still, he's not worried about future migration issues. "It's not like the data's locked up and we don't have the key," he says.

– Robert L. Mitchell

> **"Archiving is very important because it allows us to keep a history of what we have done on this site, both text and graphical.**
>
> **WAYNE AIELLO,** VICE PRESIDENT OF E-BUSINESS SERVICES, CORPORATE EXPRESS INC.

THE MISSING LINK

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Database Horizons

A new wave of technology promises to simplify administration and bring together heterogeneous information.
By Gary H. Anthes

THE MODERN database era began in 1970, when E.F. Codd published his paper "A Relational Model of Data for Large Shared Data Banks." His ideas enabled the logical manipulation of data to be independent of its physical location, greatly simplifying the work of application developers.

Now we are poised for another leap forward. Databases will scale to gargantuan proportions, span multiple locations and maintain information in heterogeneous formats. And they will be autonomous and self-tuning. The major database vendors are pursuing these goals in different ways.

Thirty years ago, IBM researcher Pat Selinger invented "cost-based" query optimization, by which searches against relational databases such as IBM's DB2 minimized computer resources by finding the most efficient access methods and paths. Now Selinger, vice president of data management architecture and technology, is leading an effort at IBM called Leo — for Learning Optimizer — that she says will push DB2 optimization into a new realm.

Rather then optimizing a query once, when it's compiled, Leo will watch production queries as they run and fine-tune them as it learns about data relationships and user needs. "It empirically derives interesting things about the data," Selinger says. For example, Leo would come to realize that a ZIP code can be associated with only one state, or that a Camry is made only by Toyota, even if those rules aren't specified in advance.

FUTURE WATCH

Selinger says Leo will be most helpful in large and complex databases, and in databases where interdata relationships exist but aren't explicitly declared by database designers. Leo is likely to be included in commercial releases of DB2 in about three years, she says.

Microsoft Corp. says users will never be persuaded to dump everything — e-mail, documents, audio/video, pictures, spreadsheets and so on — into one gigantic database. Therefore, the software vendor is developing technology that will allow a user to seamlessly reach across multiple, heterogeneous data stores with a single query.

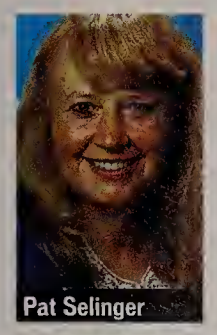
Query Optimization

What is it? New database technology for optimizing performance, minimizing administration and querying distributed, heterogeneous information.

Reality check: Expect to see some results by the end of next year. Other capabilities are years away.

Impact: Easier information access, lower cost

Microsoft's Unified Data project involves three steps, says Stan Sorensen, director of SQL Server. First, the company will devise "schema" based on XML that define data types. Then it will develop methods for relating different data types to each other and finally develop a common query mechanism for distributed databases. For example, Sorensen says, "Suppose I search for a document that references *Microsoft*, and the document 'tells' the query that there's also a media file in another place that references *Microsoft*."


Pat Selinger

Jennifer Widom

The technology will appear in 18 months in SQL Server. It will be added to other Microsoft products in ensuing years.

Oracle Corp. says its customers are moving toward data stores of huge size and complexity, spread over multiple locations. The company says its products will not only evolve to handle those kinds of jobs, but will also do them extraordinarily well. "Over the next couple of releases, we'll see essentially fully autonomous databases," says Robert Shimp, vice president of database marketing.

Oracle also wants to facilitate collaboration for people in different companies with widely varying information types. "What doesn't exist today is the underlying infrastructure, or plumbing, that's capable of managing all these diverse types of data," Shimp says. "What you need is the ability to link all these clustered databases around the globe into a single, unified view for the individual user."

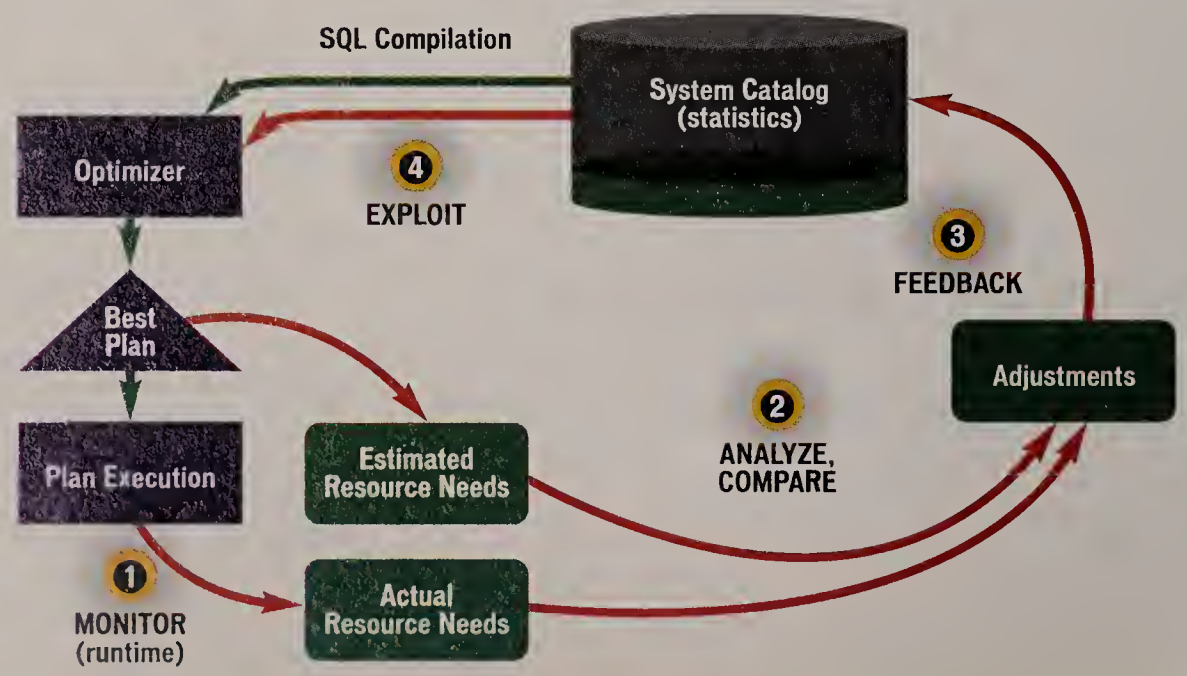
Elsewhere, researchers are finding that the best design for some database applications isn't a traditional database at all, but rather data streams. Researchers at Stanford University are working on ways that continuous flows of information — such as Web site hits, stock trades or telecommunications traffic — can be passed through queries and then archived or discarded. A query might, for example, be written to look continuously for suspicious patterns in network traffic and then spit out an alert.

The problem in handling some kinds of problems with a traditional database management system is one of timeliness, says Jennifer Widom, a computer science professor at Stanford. "If you want to put a stream of data into a DBMS, you have to at some point stop, create a load file, load the data and then query it," she says. "Data stream queries are continuous; they just sit there and give you new answers automatically."

Widom and her colleagues are developing algorithms for stream queries, and she says her group will develop a comprehensive data stream management system. A prototype of such a system will take a number of years to develop, and the underlying technology will then be either licensed or offered as freeware, she says. ▶

Learning in Query Optimization

IBM's Leo query optimizer watches queries run and fine-tunes them as it learns about data relationships and user needs.



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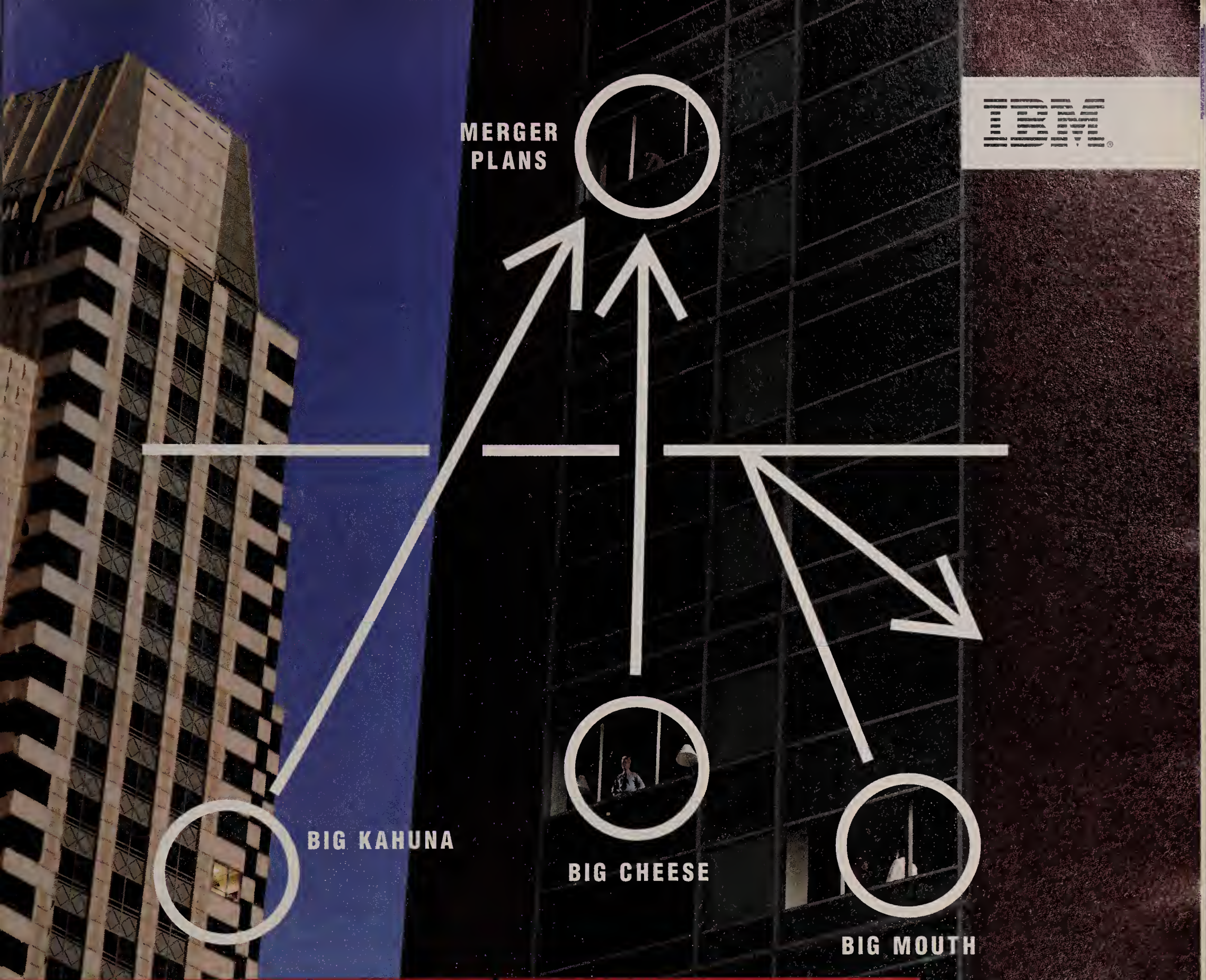

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Open-Source Licensing

DEFINITION

An **open-source software license** permits users to read, access, change and reuse the source code of a software product.

BY MARK HALL

WHETHER it's Apache on your Web servers or Linux supporting your databases, free open-source products, just like those from Microsoft Corp., have software licenses. And it's wise to know your rights and the responsibilities that accompany these legal documents.

QUICK STUDY

The first thing to remember is that open source, as advocates never tire of explaining, means free as in *freedom* rather than free as in price. Open-source players such as Red Hat Inc. in Raleigh, N.C., are allowed to charge any amount to package and distribute the technology. Of course, you can bypass that expense by going to a Web site that stores the source code and downloading it for free. But the licensing requirements remain in force.

It's also important to know that there are many types of open-source licenses (see box). There are a few quirks among the various licenses, which is why there are so many and why you'll need to review them before you venture into open-source development. For example, the ultraefficient one-page BSD license has a mere three points to comply with, but the 12-page Mozilla Public License 1.1 covers everything from definitions of terms to how the license applies to governments.

A key open-source licensing provision, as noted in the Mozilla license and others, is that if you change the code, you must document your changes and include your source code in the documentation.

Most important, as stated in the GNU General Public License (GPL): "You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License." In other words, if you use an open-source program anywhere in your code, your product must comply with open-source strictures.

And like most software, open-source licenses describe products delivered in "as is" condition with no warranty that they will actually work.

Quite a few companies offer open-source versions of their commercial products, and more are doing so, adding another level of complexity to licensing issues.

For example, in May, San Francisco-based NetDive Inc. released an open-source version of its Web conferencing software, eAuditorium. NetDive CEO B. Dean Angari says this will help companies review the technology internally. "Our customers can modify the code, create derivative products and distribute internally, and they don't have to pay royalties," he says.

Although NetDive's contract "mirrors" the popular GPL, it isn't sanctioned by "open-source die-hards," Angari acknowledges.

Open-Source Options

Most companies that venture into open source for their commercial products either seek approval of their open-source approach, like Sun Microsystems Inc. did with its Sun Industry Standards Source License, which affects a portion of its software, or they use an existing license.

Oslo-based Trolltech AS has made a successful business of delivering Qt, its application development framework, in both GPL-based open-source and commercial versions.

John Palmeri, manager of core animation software at The Walt Disney Co. in Burbank, Calif., uses a commercial version of Trolltech's product. But before buying it, Disney took advantage of Qt's open-source nature by testing it extensively without having to worry about an evaluation period coming to an end. Even after Disney bought Qt, Palmeri says, "having the source code in-house is a big win for us."

"For one thing, we don't have to worry about code escrow agreements," Palmeri says. "Further, we can compile and use Qt under different compilers or different versions of the same operating system without major headaches."

Then there are the things he was able to do as code creator. "As a developer, I was able to use inheritance to extend or modify the functionality of Qt's classes," Palmeri says.

"For instance, one of the early versions of Qt had a problem trapping a mouse double-click. I was able to write a method to trap the double-click and still retain the basic mouse functionality provided by the Qt API [application programming interface]," he says. "Having the source code also allows our developers to look under the hood so they can learn not only what the API call does, but how it does it."

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Search Engines Break the Sound Barrier

Specialized software that makes audio content searchable could become a new tool for managing everything from call center recordings to corporate meetings.
By Robert L. Mitchell

DO YOUR telemarketers consistently make legally required disclaimers when selling securities? If your firm records its telemarketing calls, IT could set up audio mining software to let management search audio file archives to quickly find the answer.

Emerging audio mining tools, also called audio indexing or audio search software, offer speech processing and search technologies in a single package. The speech engine creates an index that includes a time and date stamp for each spoken word or phoneme in an audio or video file. The search engine then uses that index to allow rapid identification and playback of specific passages. The software may also apply metatags that identify the speakers or the subject of a given passage.

The speech-processing accuracy of speech-to-text engines, traditionally used to index high-quality broadcast audio, has advanced to the point where vendors are introducing new packages for indexing more informal conversations, ranging from corporate meetings to training videos and even help desk telephone conversations.

"[The technology] seems to have passed the threshold of usability," says William Meisel, president of TMA Associates, a speech-recognition consulting and market research firm in Tarzana, Calif.

EMERGING TECHNOLOGIES

Unlike speech-to-text packages, which can be trained for individual users, audio indexing products are speaker-independent. They also rely on large, language-specific vocabulary dictionaries, as well as domain models that may optimize for the type of conversation (e.g., telephone) or industry (e.g., health care). While the newest products can process audio at or faster than real time with an accuracy sufficient for searching, the output text isn't a readable transcript, cautions Jackie Fenn, an analyst at Stamford, Conn.-based Gartner Inc. And as new companies, products and terms come into use, users must update their systems regularly or face what Francis Kubala, division scientist at Cambridge, Mass.-based BBN Technologies, calls "the out-of-vocabulary problem."

Audio mining's most compelling fit may be for applications where a searchable index can replace the need for transcription. In contrast, data mining of audio content for marketing purposes is "a little bit of an evangelistic sell" at this point, Meisel says.

"The call center is a little tougher, because you may or may not discover something [with audio mining]," explains Fenn.

The technology's greatest value may be derived from embedding it in other applications. San Mateo, Calif.-based Virage Inc., for example, offers both Atlanta-based Fast-Talk Communications Inc.'s Fast-Talk and BBN's Audio Indexer as plug-ins to its VideoLogger video indexing system. More advanced applications could eventually integrate call center logs with sales activity and other customer relationship management data, analysts say.

But audio mining hasn't worked in every case. Ted Ryan, manager of collections development at Atlanta-based The Coca-Cola Co., says he wanted to use it to index television commercials last year, but "the voice-overs clashed with the music." With an accuracy rate of just 15%, he turned to manual transcriptions.

Coca-Cola also tried using audio indexing of meetings. "Our chief executive [at the time] was Cuban. When we ran it with executive speeches, it came up with gobbledygook," Ryan says.

Nonetheless, he says he's interested in testing the latest tools to index radio advertisements. And accuracy continues to improve, says Kubala, adding that he expects the word error rates for nonbroadcast audio to drop dramatically during the next three years.

AT A GLANCE
Audio Indexing Software

WHAT IS IT?
Software that creates a searchable index of speech content embedded in digitized audio and video files. It date- and time-stamps each word or phoneme in order to rapidly identify and access target segments.

WHAT'S THE BENEFIT?
Allows quick searches for and rapid access to audio content.

BEST APPLICATIONS
Indexing and data mining of broadcast audio content, speeches, e-learning content and audio reports, as well as real-time alerts of live audio feeds based on keywords.

CAVEATS
Accuracy is still improving. Indexed output text, while acceptable for searching, doesn't produce a usable transcript. Depending on the application, vocabulary sets may require frequent updating to maintain accuracy levels.

SOUND SEARCH
For more information and links about audio mining, visit our Web site.
QuickLink: 31326
www.computerworld.com

PRODUCT PIPELINE
Searching For Sounds

While IBM has a strong presence in speech-to-text and voice command applications with its VisualVoice product, three companies are pioneering voice-recognition technology for audio mining. All can process text in real time or faster. The firms fall into two camps:

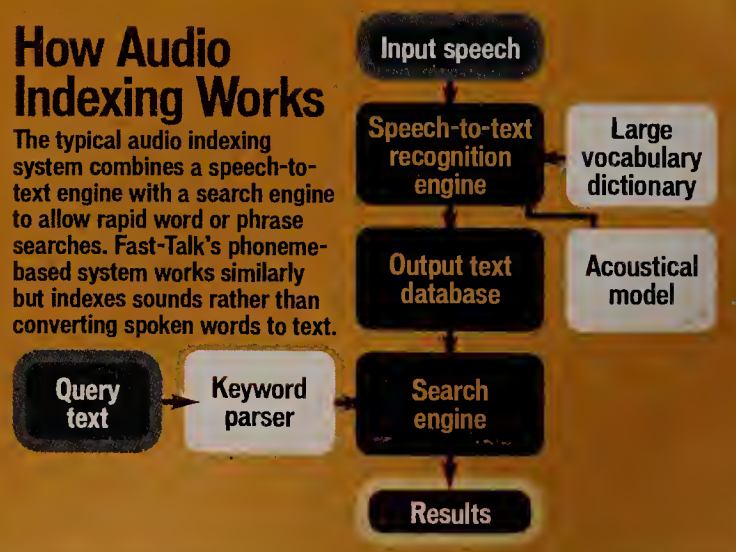
Text-Based Indexing
Both ScanSoft Inc.'s Dragon Media Indexer and its Audio Mining Development System for programmers combine the speech engine from the company's Dragon Naturally Speaking product for speech-to-text conversion with a search engine. While Peabody, Mass.-based ScanSoft's products support only English, the company offers acoustical models to handle telephony, broadcast and nonbroadcast audio, and dynamically updatable vocabulary sets.

BBN Technologies offers the most sophisticated speech-to-text indexing system. Audio Indexer can apply metadata to output text to identify the topic and speakers in a conversation. Designed for real-time alerts on live, broadcast-quality audio streams, Audio Indexer is sold only to independent software vendors that integrate it into their products. BBN plans to introduce features later this year to allow users to add words, speaker profiles or audio classifications.

Phoneme-Based Indexing
Fast-Talk Communications Inc.'s Fast-Talk avoids relying on vocabulary sets by generating a proprietary phoneme index and using a specialized search engine. The product supports Spanish and works with telephone recordings. Fast-Talk co-founder and developer Mark A. Clements says the engine can perform audio mining tasks such as finding how many times a company was mentioned during a broadcast. But for some tasks, speech-to-text may fit better. "Fast-Talk has a higher accuracy for pure audio search," says Jackie Fenn, a Gartner analyst. "But for the mining side, where you want to analyze it [with other tools], then you've really got to rely on the text approach."

How Audio Indexing Works

The typical audio indexing system combines a speech-to-text engine with a search engine to allow rapid word or phrase searches. Fast-Talk's phoneme-based system works similarly but indexes sounds rather than converting spoken words to text.



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Getting Down and Dirty With Intrusion-Detection Systems

A SANS Institute intrusion-detection training class emphasizes practice as well as theory. By Mathias Thurman

THIS WEEK I TOOK a brief hiatus from security staff recruiting to attend the six-day Intrusion Detection In-Depth training class run by the SANS Institute in Cary, N.C.

Intrusion-detection systems (IDS) are something in which I've had to invest significant amounts of time of late, so I can readily put this hands-on training to use. I also wanted to hear the two speakers, whom I consider experts in the field. Stephen Northcutt is an expert in packet analysis. And since a significant amount of my IDS infrastructure is based on Snort, an open-source IDS application, I jumped at the chance to listen to its creator, Martin Roesch.

During the classes, Roesch provided a general history of Snort and its development into a commercial-grade packet-capturing and intrusion-detection tool, and he was eager to demonstrate some of its cool features.

I particularly liked a feature called session replay, which lets an administrator capture and replay the actions of a specific user. This is nice to be able to do if you suspect an individual of malicious activity. With session replay, you can capture the user's keystrokes and either replay them in real time or store them in a capture file for later analysis.

Fast and Furious

SANS courses aren't for the faint of heart. The curriculum is fast-paced, and students are expected to possess specific skills before attending. For the intrusion-detection class, students must already understand TCP/IP fundamentals such as IP addresses, ports and protocols, as well as TCP concepts such as flags, sequence numbers and the three-way handshake.

Security professionals not familiar with these terms shouldn't take this course. Those who did so ended up getting lost, falling asleep, wasting class time by asking basic questions and feeling frustrated.

SECURITY MANAGER'S JOURNAL

Fortunately, I had the background, so I found the course stimulating. Northcutt spoke with great intensity, and it's obvious that he's comfortable with the subject matter he teaches. He moves quickly through the material, but if you understand the fundamentals, his lectures make for a fabulous training experience.

Most of the technical tracks SANS offers include a hands-on lab portion, and the intrusion-detection course was no exception. My class used the freely available packet-capturing programs WinDump, Tcpdump and Snort to view pre-captured network traffic, which we also used in the data analysis portion of the class. In addition, we spent a whole day configuring and running Snort with Roesch. I had specific questions regarding the way I have Snort running at my company, and Roesch readily answered them — both during and after class.

SANS courses aren't for the faint of heart. The curriculum is fast-paced.

Another SANS course I've been looking into is Hacker Techniques, Exploits and Incident Handling. While attending the IDS class, I was able to get a copy of the course materials for this track, and it looks quite good. The program combines theory and hands-on exercises in hacking different operating systems and then follows up with incident-handling techniques.

In the past, I've been called into the CEO's office, shown a defaced company Web page and asked to explain why our IDS infrastructure didn't pick up the attack. Believe me, you want to be prepared. This will be my next SANS course.

Back to Reality

I returned from the SANS training to a series of 1.7 million Snort IDS alerts. These were primarily generated by employees using music- and file-sharing programs.

Since we're short-staffed, I'm currently the only individual responsible for monitoring the IDS alerts, and I was unable to do so while away due to slow dial-up connections. For serious issues, I had rules configured to send e-mail alerts to my pager. Thankfully, none was triggered.

During the class, I had the chance to share my IDS woes over music-sharing sites with the other attendees. They asked why I don't just block users from accessing those sites, since they're violating company policy. But we don't yet have an acceptable-use policy in place to address music- and file-sharing programs, and we can't control network abuse by implementing firewall restrictions until we have that policy in place.

The holdup is mainly because of European privacy laws, which are a bit more stringent than those in the U.S. For example, if our company policy is to filter e-mail for certain words that might be an indicator of malicious activity, as a U.S. company we can make a blanket policy statement. But European privacy laws require individual agreement before this filtering can take place.

Until those issues are resolved, we can't configure our firewalls to block access to those sites. We can, however, identify individuals who visit them and contact their managers. I mainly collect such traffic for identification. Yes, it doesn't seem right, but it's a political issue and a business problem.

Now that I'm back, I'm going to start putting my new IDS packet analysis knowledge to work. I've already reconfigured the way my sensors filter certain types of network traffic by having them drop the packets at the network layer, before the IDS software has a chance to examine the packets. This is also referred to as a Berkeley Packet Filter. It makes the IDS more efficient by decreasing the amount of traffic the IDS engine must process.

Now, of course, I've got to get back to filling those staff vacancies.

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com, or join the discussion in our forum.

QuickLink: a1590

To find a complete archive of our Security Manager's Journals, go online to **computerworld.com/secjournal**

SECURITY LOG

Security Bookshelf

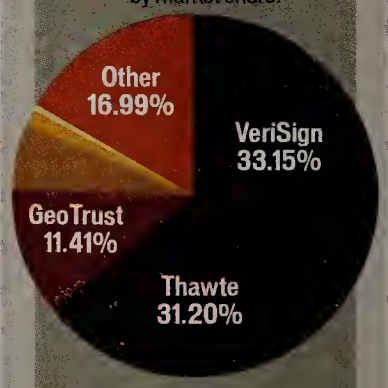
■ ***Hackers Beware: The Ultimate Guide to Network Security*, by Eric Cole (New Riders Publishing, 2001).**

Eric Cole is an expert on protecting against hacking and exploits and has authored this fine reference on the subject. From hacker methodology and mentality to attacks against specific operating systems and applications, *Hackers Beware* covers almost every area of computer and network security.

Cole writes for intermediate-level security professionals, but there is plenty here to interest others. For many of the exploits, he includes a description, screenshots, where the code can be retrieved, how to detect it and how to avoid becoming a victim.

Popular Authority

Certificate authorities, by market share:



Self-signed	5.79%
Entrust.net	1.31%
TC TrustCenter	0.15%

SOURCE: SECURE SERVER SURVEY OF 91,136 SERVERS WORLDWIDE, JUNE 2002. E-SOFT INC., BURLINGTON, ONTARIO

Hard Drive Blocks Hackers

Scarabs Corp., a Japanese venture in Chiba Prefecture, has developed a hard disk drive with two heads that prevents disk files published on the Web from being altered by hackers. The device includes a read-only head connected to a Web server for browsing content, and a read/write head connected by a separate cable to a PC for administrators. Scarabs hopes to ship samples by year's end.

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THIS WEEK

KEITH DANNEMILLER/CORBIS SABA

LEADERSHIP LESSONS

Emma Espino, CIO at Grupo Cementos de Chihuahua, used her executive education class to brainstorm with peers. Read how other IT execs are getting payback from these programs and see the results of *Computerworld*'s Executive Education Survey 2002. **PAGE 38**

SECURITY FROM WITHIN

While bleeding-edge technology may be exciting, it's not the cure-all for security concerns in the high-stakes financial services arena. More often than not, making sure an employee has only the network access his job requires will help solve the majority of security issues, experts say. **PAGE 44**

SURVIVING STRESS

With workplace stress on the rise, IT professionals need to start taking better care of themselves. Here are some tips on how to get started. **PAGE 46**

CAREER ADVISER

Fran Quittel offers advice on where to find IT jobs in the private sector and federal government. **PAGE 47**

WORKSTYLES

The IT department at NASA's Goddard Space Flight Center enjoys the thrill of having a truly heavenly mission. **PAGE 47**

JOHN BERRY/PEER TO PEERS

Six Sigma Savvy

MANY MANAGEMENT TECHNIQUES have begun shining the prosecutorial light on the sometimes criminally bad economic performance of IT. Six Sigma is one such rigorous technique designed to extract quantum operational performance improvements. It just might have what it takes to get out of our suspect what other management techniques perhaps aren't tough enough to do.

A management methodology meant to drive process improvements in the manufacture of goods and services, Six Sigma has kept its edge while some other management approaches — think Enron's "asset light" — have fallen from intellectual exhaustion. The basic idea behind Six Sigma is to achieve product perfection by eliminating defects in the business processes that create the product. To reach Six Sigma, a process must yield no more than 3.4 errors per million chances at generating them. Near perfection is demanding, indeed. Yet not impossible. GE, for example, touts that it has saved $8 billion in three years using this rigorous approach to quality control.

Why should IT managers care about this? Well, companies have discovered that Six Sigma is great at surgically reducing costs and improving productivity across all business functions and workflows. Service industries, from health care to financial services, have already launched Six Sigma programs.

Where is the link between Six Sigma and IT economic value assessment? Their goals may vary: Six Sigma seeks product and service excellence by improving the processes that deliver that product or service; IT seeks to reduce costs and generate revenue. But both are intensely focused on business process measurement. Six Sigma asks, Where can the organization re-engineer processes to reach quantifiable quality? IT value assessment asks, Where can the organization re-engineer processes to reduce costs and perhaps generate revenue? Yet both methods measure work processes to reach their respective aims.

Six Sigma measurement skills are highly useful in conducting an IT economic value assessment. In the end, managers may find that a bona fide Six Sigma exercise is a useful prerequisite to IT economic value assessment. Since both techniques involve process improvements, Six Sigma can provide the necessary rigor to measure those places in the workflow where process improvements and cost reductions are achievable. IT economic value assessment would then come along, assign a financial value to those improvements and run those metrics through the financial calculations, such as ROI or payback, that management wants.

For example, take an investment in a group practice management system — a health care application meant to improve medical practice workflow. The technology promises to reduce costs and potential confusion around setting appointments. In order for a financial assessment to be accurate, however, the practice business manager must have a detailed grasp of existing workflow and of the improvements that the new technology will drive.

Enter Six Sigma. Practitioners would define a time-consuming process that, if improved, would cut costs and improve service — in this case, appointment-setting. They would then measure how this task is accomplished today and analyze where improvements could be made using IT. The practitioner would learn that appointment management could be cut to three steps from five and that proper controls-fixed functions in software would virtually eliminate errors and redundancy in the process.

Rigorously applied, Six Sigma can help validate a software vendor's claims. It may assert a 30% time reduction to some process. But managers with Six Sigma measurement data may uncover that the estimated cost reductions at their companies are actually half that. Since Six Sigma, properly applied, is so rigorous, its data might prompt the company to negotiate a better deal for the software or realize that a vendor's application just misses what it needs to improve workflow.

If it isn't apparent, IT managers playing a central role in economic value assessment are discovering that the vocabulary of strategic investments is built on management issues as much as it is on scalability, uptime, redundancy and other traditional benchmarks. As intelligent as IT professionals are, learning a new language can be hard and time-consuming. Who's up for it?

JOHN BERRY is an IT management consultant and analyst in Bend, Ore. He's currently writing a book about the measurement of intangible assets. Contact him at **vision@according2jb.com.**

COMPUTERWORLD
EXECUTIVE
EDUCATION
SURVEY2002

The payoff isn't always palpable, but IT executives say there's real value in executive education programs. Here's how they pick the ones that are worth the investment. By Melissa Solomon

DISCOVERING THE Leader WITHIN

DURING her 20-year rise through the IT ranks, Atefeh Riazi had always credited much of her success to what she considered her greatest strength: her diplomacy.

But when Riazi headed to Hartford, Conn., four years ago for an executive education program run by Rensselaer Learning Institute, she had to throw that assumption out the window.

After the course instructor reviewed about 30 questionnaires filled out earlier by Riazi, her boss and her subordinates, she was told that her self-described greatest strength was, in fact, her greatest weakness.

"My problem was I was too frank. I was too honest. And that was not a strength — that was a weakness," says Riazi, CIO at Ogilvy & Mather, a New York-based marketing firm.

The experience was life-changing for Riazi. But finding executive education programs with that kind of powerful payback can be as challenging for IT leaders as clearing time from their schedules to attend.

Rather than teaching new skills, executive education programs seek to motivate and inspire leaders to think and act in new ways. As a result, the benefits can be as hazy as the subject matter. And in this economy, many IT managers are finding that executive education, for all its benefits, is a tough line to justify in their bare-bones budgets.

To identify what makes an executive education program worth the investment, *Computerworld* asked 82 IT executives who have selected programs for themselves and their staffs to tell us about their experiences. Based on their responses and interviews with IT managers, we assembled the following tips for picking the best programs.

Cash Crunch

The top five considerations for choosing an executive education program:

1. Cost
2. Quality of teaching staff
3. Course content
4. Time away from the office
5. Level of customization

SOURCE: *COMPUTERWORLD*'S 2002 EXECUTIVE EDUCATION SURVEY OF 82 IT EXECUTIVES

Find Networking Opportunities

When asked about the most beneficial elements of executive education programs, IT leaders immediately talked about networking. The key is finding conferences that draw big crowds of high-level IT executives who are given time to share ideas.

"It's invaluable," says Tim Ferrarell, senior vice president of enterprise systems at W.W. Grainger Inc., a Chicago-based distributor of business maintenance products. "Many people are facing the same problems." Ferrarell says he looks for conferences that allow plenty of time to talk with other attendees. He sets a goal of meeting five people at each conference and then follows up with them to develop long-term connections.

Such relationship-building is critical, says Sue Goldberg, president of Northeast Training Group Inc., an IT training services firm in Chestnut Hill, Mass. Online training can be helpful, but meeting and brainstorming with peers outside your company is key, she says.

"Executives need to be in touch with other executives," says Goldberg. "Understanding where people are going, where the world is going. You can't be abreast of everything."

Think Outside the Box

It's human nature to gravitate toward topics you're familiar with, says Riazi. But she encourages staff members to broaden their perspectives by finding conferences on topics they know nothing about. In performance reviews, managers talk with employees about the areas where they could use improvement, and their professional development is centered around those areas, she explains.

Two other types of executive training Riazi suggests are presentation training that teaches managers how to sell their ideas, and foreign language lessons for employees who work with global offices. To gain respect from worldwide employees, it's important for U.S. managers to understand cultural and technical issues in those countries, says Riazi. A good place to start is learning to speak a few phrases of other languages — a low-cost, high-return training that many executives ignore, she says.

Tom Rideout, senior manager of technology development at Johns Manville, a Denver-based building materials manufacturer, recently gave a presentation at an outsourcing conference held by The Conference Board Inc. in New York. He says that because he was a speaker, he attended the conference at no charge

Continued on page 40

ATEFEH RIAZI, CIO at Ogilvy & Mather, says an executive education program changed her assumptions about her skills.

ANDRÉ SOUROUJON

Trends at a Glance

CONFERENCES ARE THE BIGGEST DRAW

21% of IT executives surveyed said they prefer to send their staffs to conferences for executive education, **17%** said programs offered by professional associations, **14%** said graduate schools, and **12%** said corporate universities.

22% said conferences are most effective in achieving their company's objectives, **21%** said professional associations. **18%** said graduate school executive education programs, and **14%** said customized corporate universities.

SEEKING MANAGEMENT SKILLS

Survey respondents said the programs they sent their staffs to most often were management (**23%**), information systems/technology (**21%**), leadership (**19%**), communication (**14%**) and business strategy (**9%**).

ONE WEEK AWAY

When asked what they consider to be a reasonable amount of class time for an executive education program, **58%** said three to five business days, **18%** said fewer than three business days. **17%** said six to 10 business days, and **3%** said 11 to 28 days. Most survey respondents (**58%**) said they sent staff to programs on both weekend and business days, while **41%** said business days only and **1%** indicated weekends only.

STRETCHING THE DOLLARS

54% of respondents said they will spend less on executive education programs this year. Those respondents cited a reduction in training budgets as the main reason for the cutback, followed by an inability to spare staff and an inability to find programs that meet their needs.

46% of respondents said they will spend more on executive education programs this year. Those respondents cited the need for new skills as the main reason for the increase, followed by staff development and employee retention.

RETURN ON INVESTMENT

40% of respondents indicated that they try to measure the effectiveness of these programs. When asked how they measure that effectiveness, IT executives cited performance of the trained employee, a productivity increase in the department overall, employee presentations and feedback, and evidence of innovation or leadership.

CRUNCHING THE BUDGET

When *Computerworld* conducted its Executive Education Survey in 2000, respondents said **$4,200** was a reasonable cost per employee for an executive education program. This year, that figure dropped to **$3,685**.

METHODOLOGY

***COMPUTERWORLD*'S EXECUTIVE EDUCATION SURVEY 2002** was conducted from June 3 to June 28. Our survey was administered online to IT executives and IT managers at organizations across the U.S. The respondents were either responsible for sending their staffs to executive education programs or had attended such programs themselves. The survey explored which types of programs IT professionals attended, the criteria used in selecting the programs and which programs they found valuable. The survey polled 82 IT managers and executives. The average 2002 training budget for these organizations was $2.5 million.

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Continued from page 39
and was able to learn from the sessions and from the questions he was asked about his presentation.

Tight budgets have led some organizations to create their own executive training programs. The Illinois Student Assistance Commission (ISAC), for example, has reduced its training budget to the point where executive education is reserved only for "urgent" cases, says Jim O'Neil, deputy director of IT at the Deerfield-based agency of the state of Illinois.

To save money, the ISAC has instead developed in-house two- to four-hour leadership courses on a variety of topics. That has helped provide continuous management development at a low cost, says O'Neil.

Do Your Homework

Because time and money are in short supply, many CIOs have developed their own litmus tests for executive education programs. Rideout says he considers the quality and regularity of information generated by conference organizers and looks over their Web sites, reads their white papers and talks with colleagues who have attended past programs.

Ferrarell says that before he even starts the selection process, he reflects on Grainger's corporate mission: to offer an integrated, multichannel delivery line for customers. For him and his top managers, the Leadership and Mastery course taught by Peter Senge, author of *The Fifth Discipline* (Currency/Doubleday, 1994), is extremely useful because it teaches systemic thinking, which applies directly to their work.

Steve Larson, an IT workforce manager at Des Moines, Iowa-based Pioneer Hi-Bred International Inc., which develops advanced plant materials for farmers, says he considers everything from timing to travel expenses when choosing a program. For example, he looks for courses held in late summer and early fall, which are generally slower seasons at Pioneer.

Larson also narrows down program selections by getting an understanding what a course will require

What Top Programs Deliver

BY JILL VITIELLO

In these days of renewed cost-consciousness, companies are careful about spending on executive education programs, which are often perceived as having a high fat-to-muscle ratio. Compared with specific technical training, "leadership development" can seem downright flabby. To find out what's beneath the surface of executive education, we dissected six programs that our survey respondents cited as most valuable.

STANFORD GRADUATE SCHOOL OF BUSINESS

Stanford University

- **Program:** Strategic Uses of Information Technology (SUIT)
- **Duration:** One week
- **Cost:** $6,900
- **Take-away:** Attendees learn new business models to apply to their own companies.
- **Web:** *www.gsb.stanford.edu/exed/*

Stanford's executive education offerings range from a six-week course in general management, known as the Stanford Executive Program, to intense one- and two-week programs in financial management, marketing and leadership. One offering that's popular with CIOs is SUIT. Working in groups of their peers, IT executives focus on applying business models to their own situations back at the office. Much of the benefit of the SUIT experience comes from high-level IT professionals working collectively to solve real-life problems.

"Stanford is very selective: This year SUIT admitted about 40% of those who applied," says Haim Mendelson, co-director of the program. "We want to be sure that the SUIT participants are at the right level in their jobs so they can apply what they learn when they return, and also so they can add value to the other students. So much of the learning takes place in the study groups. Plus we hope that SUIT participants will stay connected to maximize the value of the network they establish here."

- **Attendee view:** That's exactly what Emma Espino,CIO at Grupo Cementos de Chihuahua SA in Chihuahua, Mexico, did. Espino used her time in the lectures and study group sessions to ask her colleagues questions about actual situations she was experiencing on the job.

"It was a real benefit to collaborate with a group of other CIOs to think about ways to solve specific problems," says Espino. "My company is going through a re-engineering project, integrating innovation with IT. The SUIT program gave me the opportunity to align IT and IT projects with my company's value proposition and strategic direction."

DARDEN GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

University of Virginia, Charlottesville

- **Program:** The Executive Program (TEP)
- **Duration:** Four weeks
- **Cost:** $25,000
- **Take-away:** Attendees learn how to integrate business acumen with interpersonal skills to gain a holistic view of work and life.
- **Web:** *http://exed.darden.virginia.edu*

Consistently ranked among the top executive education programs in the world, Darden is unusual in its holistic approach to training future leaders. TEP includes the standard features of an intense executive education program, plus a rigorous academic curriculum in general management. A hands-on, computer-automated business simulation allows participants to work in small groups to manage a hypothetical company.

What makes Darden's TEP distinct, however, is the regimen of physical exercise and consultation with a trainer and dietician – all aimed at getting the future executive to focus on the value of personal health.

"Executives return to their companies and model healthy behavior for their colleagues. Our program may even save some lives along the way," says Brandt Allen, Darden's dean of executive education.

"IT WAS A REAL BENEFIT to collaborate with a group of other CIOs to think about ways to solve specific problems," says EMMA ESPINO of Grupo Cementos de Chihuahua.

KEITH DANNEMILLER/CORBIS SABA

Cost-Saving Tips

Go one-on-one. If you're interested in a conference because of a speaker, try to plan a private meeting or phone call with that person.

Line up a speaking gig. Conference speakers usually attend at no charge and get the added benefit of feedback from participants.

Boost your in-house program. Consider hiring a consultant to customize a curriculum.

Get the timing right. Find programs that are held during your company's slower periods, when lost productivity will be less of an issue.

of would-be participants. For example, if a program demands a heavy load of precourse preparation and homework, it might not be the right fit for someone who needs more time for reflection and recharging.

Look for Hands-on Training

Case study presentations are another popular feature of executive education programs, say CIOs. Ferrarell looks for conferences that offer CIO-only sessions where attendees are presented with case studies and work together to solve problems, such as those offered by Gartner Inc. and Meta Group Inc.

Riazi says she prefers the personal touch. One of her favorite forms of professional development is the one-on-one sessions she attends several times a month with IT management coach Michael Brenner of Brenner Executive Resources Inc. in New York. Riazi says that even though IT leaders' analytical skills may be sharp, their positions require intense social skills that may have been neglected.

"Leadership is so critical in technology, more than other fields, because it brings about change," she says.

And despite the increased attention on training costs, most IT executives surveyed don't attempt to measure the effectiveness of their executive training investments. But they know the value is there.

"I don't think we've ever thought about putting hard numbers to executive education," says the ISAC's O'Neil. "I wouldn't even know where to begin . . . because I don't know how you'd measure the impact. Over time, you'd like to think that you get a better approach." ◗

Solomon is a freelance writer in New York. Contact her at melissa solomon7@hotmail.com.

THE HOLISTIC VIEW

IT managers offer advice for finding leadership development to stretch the mind, body and soul.
QuickLink: 31518

Read about the pros and cons of e-learning systems from IT managers who have taken online courses themselves.
QuickLink: 27467
www.computerworld.com

■ **Attendee view:** Ed Carson returned from TEP in June this year 17 pounds lighter and charged up by the experience. The business manager at Boeing Commercial Space Co. in Kent, Wash., works on Resource21, a global information system satellite used by industry and the government for data and intelligence gathering.

"What I learned at Darden had direct application to my job," Carson says. "When I selected Darden, I wanted a qualitative approach to refresh my skills, as well as the opportunity to gain acumen for leading an innovative, global enterprise. I was not disappointed."

THE WHARTON SCHOOL

University of Pennsylvania, Philadelphia

- **Program:** Executive Development Program (EDP)
- **Duration:** Two weeks
- **Cost:** $18,500
- **Take-away:** Attendees learn high-impact leadership and business skills.
- **Web:** *http://aresty-direct.wharton.upenn.edu/execed/course.cfm?Program=EDP*

Wharton's business school offers options for advanced learning, including an array of MBA programs and executive education courses. The two-week EDP gives executives moving to a new level of responsibility broad exposure to business functions and general management.

■ **Attendee view:** When Jim Knight attended EDP this past spring, he was the lone IT executive in a class of about 40. The senior vice president and divisional CIO for the claims department at Chubb & Sons Insurance Co. in Warren, N.J., supervises 145 employees and oversees multimillion-dollar enterprisewide IT projects.

"Wharton helped me become a better negotiator and is helping me translate the benefits of IT into business values that align with the strategic direction of my organization," Knight says. "I'm also working more productively with my people – encouraging greater accountability and drawing out their strengths, rather than marginalizing them by concentrating on areas of weakness."

GEORGE WASHINGTON UNIVERSITY

Washington

- **Program:** Executive Master of Science in Information Systems (EMIS)
- **Duration:** 15 months
- **Cost:** Approximately $30,000
- **Take-away:** Attendees earn a specialized graduate degree.
- **Web:** *www.msist.gwu.edu/program/emis*

Known for its diverse offerings, George Washington University is popular with the military and with high-tech organizations. The university offers a Contemporary Executive Development program that places a special emphasis on public policy. The EMIS is geared toward IT executives making technology decisions that will have a strategic impact on their organizations.

■ **Attendee view:** That's what drew Louis McDonald to the program. The industry director for IT and telecommunications at Virginia's Center for Innovative Technology in Herndon, already has a master's degree in computer science, which he earned in 1984.

"I needed to update my skill set and learn more about bringing technology and business together," says McDonald.

He began the EMIS program in 1999 and completed it the following year. He and 20 classmates met once a week on alternating Fridays and Saturdays. Because he changed jobs in the middle of his studies, McDonald ended up paying most of the tab himself, but he says what he gained from the experience was worth the investment. In his job, he helps universities match their technology innovations to potential commercial applications.

John H. Carson, director of the EMIS program, says McDonald's profile is typical. "Most EMIS students pay their own way," says Carson. "They use what they learn in class every day on the job. Many of them tell us they are queued up for a promotion managing a large technology group for their organizations. They come [here] to get the degree that will qualify them to accept the new position."

OUELLETTE & ASSOCIATES INC.

Bedford, N.H.

- **Program:** Various IT workshops
- **Duration:** Two days
- **Cost:** Approximately $1,000
- **Take-away:** Attendees learn new strategies for specific IT issues within their companies.
- **Web:** *www.ouellette-online.com*

Not all executive education has to be costly or directed only to the highest-level individuals. Ouellette & Associates offers lower-cost, IT-centric training and development workshops that help IT leaders embed leadership qualities within their organizations. This way, CIOs can spend training dollars to influence the entire IT environment rather than invest in a few handpicked fast-trackers.

The company specializes in the human side of technology, teaching IT people how to improve service and consult with internal business partners. One of its most popular offerings clues IT professionals in to the politics of project management.

"IT executives are so busy, it is often hard for them to take advantage of the business school programs," says Dan Roberts, president of Ouellette & Associates. "We offer workshops with a short duration that have a high impact and are manageable to fit into tight schedules."

■ **Attendee view:** Deane Morrison, CIO at Capital Region Healthcare in Concord, N.H., relies on Ouellette & Associates to help him establish and maintain an organizational culture among his IT staff in several locations throughout the state that's focused on delivering customer service. He customizes the workshops for a mixed audience – IT professionals and their internal clients. "In this way, we achieve a neutral, objective atmosphere for a productive dialogue that helps us solve service issues and create understanding about technology among our clients," he says.

EXECUTIVE KNOWLEDGEWORKS

Crystal Lake, Ill.

- **Program:** Customized executive education
- **Duration:** Varies
- **Cost:** $75,000 and up
- **Take-away:** Attendees learn to brainstorm solutions to specific company problems.
- **Web:** *www.ekw-hrd.com*

For companies that want to assemble a team of executives to hammer out specific problems within their organizations, Executive KnowledgeWorks (EKW) provides a framework for deluxe, customized programs to help them.

"Our clients don't want generic programs on leadership, strategy and marketing. They want a process that enables them to reach their own goals," says Anthony Fresina, president of EKW.

EKW arranges unique accommodations for the executive teams, culls faculty members from the world's finest business schools and has facilitators to pull it all together. In some of EKW's programs, attendees have done their brainstorming and set strategic direction at NASA's Johnson Space Center, Robert Redford's Sundance Studio and the Civil War battlefield in Gettysburg, Pa.

■ **Attendee view:** "To this day, there are executives at the Lincoln Financial Group who say that the Gettysburg experience was the best event they ever attended," says Barbara Taylor, former director of executive education for the Philadelphia-based financial services firm and now president of Taylor Executive Consultants. "This was the meeting that clarified Lincoln's vision for the future."

BACK TO SCHOOL

Go online to view a list of companies that provide executive education programs.
QuickLink: 27468
computerworld.com

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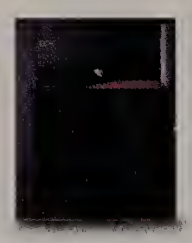

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SECURITY: An Internal Affair

Regularly reviewing employees' computer and network access rights is the first step to ensuring security at financial services companies.

By Lucas Mearian

SECURITY MANAGEMENT at financial services firms has traditionally focused on high-profile external attacks that result in a loss of network services, exposed customer data or wire fraud.

That all changed after Sept. 11. Now, as the government continues to issue warnings that the next terrorist attack will likely target electronic data networks, IT managers are shifting their attention to securing financial networks and physical access.

"Obviously, the worst news in the world for a big financial institution is not just to be a victim of wire transfer fraud, but also a wire transfer fraud that was used to aid and abet terrorist groups," says Jerry Brady, chief technology officer at Guardent Inc., a Waltham, Mass.-based information security firm.

Despite all the drum-beating around cyberterrorism, the bigger security threat for financial services companies lurks around the wall of each and every cubicle. In fact, 75% of respondents to the latest computer crime survey sponsored by the FBI and the San Francisco-based Computer Security Institute said disgruntled employees were the most likely source of insider attacks during the preceding 12 months.

Some experts say that much of the perceived threat surrounding cyberterrorism is hype, or that it's not as potentially damaging as other, more common kinds of security threats.

"From a risk and cost perspective, financial services firms will lose more from other security threats than cyberterrorism," says Dennis Behrman, an analyst at Meridien Research Inc. in Needham, Mass. "To me, the glaring security threat has nothing to do with technology."

Crafting Technology to Enforce Business Policy

According to Brady and financial services IT executives, most companies are taking existing security practices and trying to fuse them with government regulations like the Patriot Act and the Gramm-Leach-Bliley Act.

Gramm-Leach-Bliley, passed by Congress in 2000, allows greater sharing of information among banks, securities firms and insurance companies while requiring that they maintain the privacy and security of customer information. The Patriot Act, passed in October in response to the Sept. 11 attacks, requires firms to know their customers better before opening accounts and to track those accounts more closely.

But it's employees, more than customers, that worry Nasdaq Stock Market Inc. CIO Steve Randich. What concerns Randich is something he calls friendly fire.

"It's someone internally with access to our systems that creates a problem," he explains.

To address that issue, Randich is "going back and looking over the list of who has access to what" and putting in place electronic cross-checks so that someone logging into a system is reminded of exactly what they're gaining access to.

Over time, employees tend to build up access to systems as they move from one position to another. But it may not be suitable to allow a systems administrator or manager to have the same access to networks as he did as a programmer. To remedy this, Brady and others suggest that role-based systematic access lists be created so a particular job function is more closely aligned with a person's actual role in an organization and his security-level clearances.

"The goal is to systematically build a role that closely defines how a business operates and then assign people to those roles so that there's no [cumulative access over time] and everything's on a need-to-know basis," Brady says.

Financial services companies are also focusing on stronger authentication methods, such as public-key infrastructure technology, and moving away from passwords for employees.

Dan Vermeire, CTO at Huntington Bancshares Inc. in Columbus, Ohio, says he's turned his attention to three major areas in security management: implementing business workflow processes, adhering to the mandates of the Gramm-Leach-Bliley Act and complying with the Patriot Act.

But Vermeire is also paying more attention to potential internal threats by focusing on technologies for employee access and access lists. In an institution the size of Huntington Bancshares, which has 10,000 employees and $26 billion in assets, there are often one to two dozen systems that have credentials associated with them.

"We're looking at other forms of access identification — a lot of card-stripe readers and possibly smart cards or more traditional credit-card-type tokens," Vermeire says. "We're also looking at how to use other forms of connectivity," including virtual private networks (VPN), to allow employees access to networks from outside the company.

"A lot of our employees are getting DSL and cable connectivity at home. That is creating security implications from an intrusion perspective," Vermeire says. In order to address that problem, he's requiring employees who need access across a VPN to use the company's software on their home computers.

In other words, even though employees may represent a potential security threat from within, it's critical to plan for and implement measures that will protect company resources when workers walk out the office door each night.

As Brady puts it, "It's understanding that monitoring can't start and end at the perimeter of your firewall but needs to be a much deeper implementation."

HOMELAND SECURITY

IT professionals could face background checks as early as next year.

QuickLink: 31681
www.computerworld.com

Simple Yet Strong Protective Measures

CLARIFY AND UPDATE system access control lists.

CONSIDER stronger authentication techniques.

REMEMBER that the person most likely to launch an attack already works for you.

EXTEND monitoring beyond the perimeter of your networks to include applications and systems.

CONSIDER outsourcing as a strategy for dealing with the complexities of monitoring systems.

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STRESS SURVIVAL STRATEGIES

The human body wasn't made to sit in front of a computer eight to 10 hours a day. Companies take the needed steps to survive. So should you. By Melissa Solomon

SITTING IN FRONT of a computer, tackling tight deadlines and working odd hours take their toll on IT professionals under normal circumstances. But lately, many workers have watched their company's financial health plummet, their colleagues get laid off, their perks get slashed and their stock options disappear. All the while, they're picking up the slack for their shrinking departments and worrying if they'll be the next to go.

Most people have heard the sermons before, but now, with workplace stress and strain on the rise, it might just be time to listen to the wealth of advice on creating a healthy work environment.

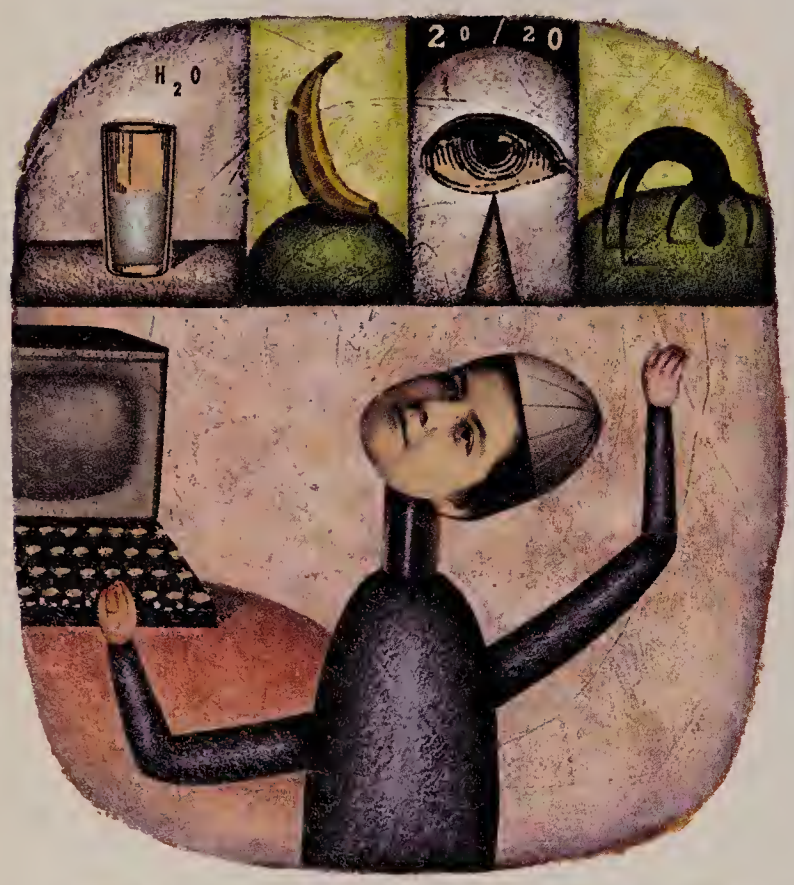
"Computer people tend to be so technically oriented that they're not really in tune with what they need," says Alice Domar, chief psychologist at the Mind/Body Medical Institute at Harvard Medical School's Beth Israel Deaconess Medical Center in Boston. "The human body was not meant to sit at a computer for eight to 10 hours a day."

Many companies, such as Metropolitan Life Insurance Co. in New York and State Street Corp. in Boston, have internal wellness centers for employees.

But it's rare for an IT department to take specific measures. "We aren't very proactive about it," acknowledges John L. Davis, vice president of purchasing for IT and engineering at National Steel Corp. in Mishawaka, Ind.

With more time and resources, workplace health and environment issues would probably be good areas to focus on, says Davis, because simple adjustments in lighting or cubicle size could help employees work more efficiently. ◗

COLIN JOHNSON



Put Your Body in Motion

Pounding on the keyboard for hours on end can lead to repetitive motion injury. Backaches, neck aches and headaches are givens – particularly for those working in IT. Here are some simple adjustments that can go a long way toward improving comfort:

- Use a chair with low-back support and adjust it so your feet are flat on the ground and your arms and thighs are parallel to the floor.
- Keep your shoulders relaxed and your back and neck straight.
- Use wrist pads only while resting. Your wrist should remain straight when you're typing.
- Periodically stretch your arms, wrists, neck and back.
- Put a warm, damp washcloth on your neck while working if you feel your muscles tightening.
- When traveling, use a briefcase or book as a footrest or to raise your laptop. Use a jacket or pillow to support your back.

See Clearly

Janine Smith, deputy clinical director at the National Eye Institute in Bethesda, Md., offers the following tips to reduce eyestrain:

- Keep your monitor straight ahead of you.
- Use a glare screen.
- Spend two minutes every half-hour looking out a window or down a long hallway. Your ciliary muscle, which you use for close-up reading, can be strained if used for long periods without rest, so give it a break by focusing on distances.
- Remind yourself to blink. People don't blink as frequently when they're concentrating, especially on the computer.
- Increase your computer font sizes and adjust the color and brightness.

Take Control

Joseph Dadourian, a Los Angeles-based workplace psychologist, and Tahira Probst, psychology professor at Washington State University Vancouver, offer the following tips to take control of situations rather than letting them take control of you:

- Stress is a physical condition, so treat it as you would any other illness. Relax, eat right, drink lots of water and exercise.
- Don't feel guilty about taking the time to deal with stress. Companies do what they need to survive, and so should you.
- Locate the nearest workforce development council and find out what types of training they offer.
- Cut back on information overload. Turn off your cell phone and pager for a while, recycle old magazines, filter your e-mail and organize your Web bookmarks.

Chill Out

The following are eight steps you can take to reduce physical and emotional stress, says Alice Domar at the Mind/Body Medical Institute at Beth Israel Deaconess Medical Center:

- Practice relaxation techniques, such as yoga, meditation or imagery.
- Practice minirelaxation techniques, such as taking slow, deep breaths (a great way to calm down in a hurry).
- Replace candy bars and coffee breaks with bananas and tea breaks.
- Take a half-hour walk during lunch.
- Question negative thoughts. Ask if a particular thought contributes to your stress, where you learned it, if it's logical and if it's true.
- Write down your emotions (and destroy the document if you're worried someone will find it).
- Give and get social support from trusted co-workers.
- Nurture yourself. Bring in fun pictures or get a nice flower for your desk.

Solomon is a New York-based freelance writer. Contact her at melissasolomon7@hotmail.com.

SITES FOR RESPITE

Go to our Web site for a list of resources that offer more information about dealing with stress in the IT workplace.

QuickLink: 31543
www.computerworld.com

Dear Career Adviser:

Where is the best place in the U.S. to be looking for computer programming jobs right now? — BEST PLACE

Dear Best:

Right now, Urbandale, Iowa-based Dice.com, a major Web site for contract and permanent IT jobs, has about 31,500 jobs postings, two-thirds of which are seeking permanent hires, with the remainder for contractors.

Although anecdotal data touts Chicago as a fairly stable market and Silicon Valley as the most volatile, Silicon Valley is Dice's No. 1 hiring locale, with more than 6,000 openings, followed by New York with 4,549 postings, Los Angeles with 2,619, Washington with 1,884, Philadelphia with 1,375 and Chicago with 1,335. C++, Oracle, SQL software, Java, Windows NT and security are the most requested skills, with hardware engineering postings down about 9% since April.

While noting an upswing in the number of contractor jobs with the federal government and aerospace and pharmaceutical companies, Dice data also shows salaries flat to slightly down for the first half of this year, for both contract and permanent hires. Contractors are averaging about $90,300 vs. permanent salaries of $62,000, which is down from $64,000 a year ago, says Scott Melland, CEO of Dice. He also notes a gender gap, with total average salaries for men in IT at $64,200 — $8,600 higher than the average salary paid to women in IT.

Finally, though today's job market is difficult, the future is still bright. A 10-year study by the U.S. Bureau of Labor Statistics of occupational growth shows that computer services are expected to grow at 6.5% while the U.S. population is growing at just 1.1%.

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at **www.computerworld.com/career_adviser.**

Dear Career Adviser:

Do you have any update on government hiring? How do I find out about those jobs? — GOING FEDERAL

Dear Federal:

Roughly 28% of the federal government's workforce is eligible to retire, and many agencies are actively recruiting, notes Dennis Damp, author of *The Book of U.S. Government Jobs, 8th Edition.* But the trick to applying for a federal job involves knowing where to look and how to apply. To find federal IT job listings, go to the recently revamped federal government's Office of Personnel Management site at *www.usajobs.opm.gov*, which lists 40% to 50% of all federal government jobs.

Then go to *http://federaljobs.net/employme.htm*, which provides direct links to the personnel Web sites of 153 federal agencies. Also visit agency Web sites that have offices in your area to locate additional job vacancies.

You can format your résumé on your own or use Harrisburg, Pa.-based Datatech Software's Federal Jobs Kit, which converts résumés aimed at the private sector into the format required for government jobs.

One last note: There are 33 areas in the U.S. in which government salaries are 10% to 15% more than the national average for such jobs. You can see the pay scale adjusted for your location at *www.fedjobs.com/pay1.htm.*

WORKSTYLES

NASA IT Group Reaches For the Stars

At NASA's Goddard Space Center, the IT department gets the opportunity to take part in the excitement of the U.S. space program, according to Linda Rosenberg, the agency's CIO/acting assistant director for IT.

What are the most critical systems supported by your department? "IT supports almost every aspect of what [NASA] does. We are responsible for the satellites and the flight instruments launched at Kennedy on the space shuttle; our scientists use IT in the instruments they use and develop; our astronomers use IT; and our ground software is totally supported by IT."

Is there special attention to security? "We have always been concerned about hackers and the criticality of NASA data. All of NASA's satellite data is sent to Goddard, and we don't want it altered or destroyed.

"Much of it is a progressive picture of, for example, the melting of the polar ice caps. If we lose a chunk of data, we don't see how the ice caps are increasing or decreasing. The firefighters in Arizona were using our satellite data to help them pinpoint where the fire was."

How would you describe the pace of work? "Very few people keep to a 40-hour week. But it's not just the job — you get involved in something and just keep going. Sometimes you're gearing up for a launch and work a lot of hours, and then August and July can be slow.

"But we're also very family-oriented. We're doing a lot of work with telecommuting and looking into providing people with cable connections. We have a day care within the center, and it's not unusual to see children in the cafeteria or in the hall."

How would you describe the overall culture of IT? "When you're launching a satellite, it's exciting to know it contains software that you had something to do with creating — or that you had something to do with the hardware and software in the Hubble telescope.

"We have a huge screen here to watch the launches, and employees have the opportunity to go to the Kennedy center to watch them as well."

Do your IT workers have to be "rocket scientists"? "We're looking for the best of the best. However, we hire many students right out of college, and it's not always from the top 10 schools.

"We hire people with strong skills in database management, knowledge management, autonomous systems or other areas from other industries."

What do you like best about how career advancement and training are handled at your organization? "We have a whole training division. When you do your yearly plan, you must state what training you're going to take."

What aspect of work do you look forward to each day? "The diversity. One thing I know is, I will never get bored. I go in thinking my day will go one way, and it pops out another way. Some people don't like that — they want a routine."

– Mary Brandel
brandels@attbi.com

NASA's Goddard Space Flight Center

Who they are: A laboratory for developing and operating unmanned scientific spacecraft.

Main location: Greenbelt, Md.

Number of IT employees: 500 to 700

Interviewee: Linda Rosenberg, CIO/acting assistant director for IT

Lead Analyst

Pitney Bowes Inc. has multiple openings in its Stamford, Connecticut office for Lead Analysts.

Responsible for the implementation and support of client serverarchitecture and technologies using Powerbuilder, Sybase, SOL, SOR, Relational Database and Object Oriented Programming techniques with an emphasis in Financial/Sales Compensation Applications. Also responsible for supporting the successful selection of technological solutions, design, development, testing, implementation and support of major business systems in a client server project development and implementation environment.

Must possess at least a bachelor's or its equivalent in Computer Science or a related field and relevant experience with Sybase, Powerbuilder, SOL, SOR, Relational Database, Object Oriented Programming and client server architecture based project development and implementation.

Resume and/or cover letter must reflect each requirement above and specify reference code LA or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700.

Senior Software Engineer

Pitney Bowes Inc. has an immediate opening in its Danbury, Connecticut office for a Senior Software Engineer.

Expand the features and capabilities of the Company's product's mission critical real-time control system and is responsible for all aspects of the software development lifecycle, from requirements gathering to release.

Must possess a bachelor's degree in Computer Science, Engineering or a related field and several years of relevant work experience. Experience must include OOAD and C++ under Windows NT on large scale, multi-developer software projects, Software Analysis and design using generally accepted software engineering tools, processes and practices, Industrial RTOS, multithreaded architectures, with emphasis on Industrial Automation and Control, CORBA with Client/Server Architectures,COM/DCOM/COM+, MFC, TCP/IP, Sockets, OOP/OOD, Java, ActiveX Automation, Control and Containers, porting of real time applications from Visual C++ to Java and the application of computer graphics into real-time applications using Visual C++ and Java.

Resume and/or cover letter must reflect each requirement above and specify reference code SSE or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700.

Programmer Analyst. Develop business s/ware apps. Bachelor degree, or equiv, in CS, Eng'g, or sim field req'd, as is 2 yrs exp in a P/A position. Prior 2 yrs exp must include exp with Oracle, SQL Server, Sybase. Competitive salary. Frequent reassignments thru US. Resumes to S. Puri, Job # 1629.40, Business Software Associates, Inc., 8140 N. Mopac, Bldg. 1-130, Austin, TX 78759

Engineer

Pitney Bowes Inc. has an opening in its Shelton, Connecticut office for an Engineer.

Support senior personnel investigating internet security threats and countermeasures and determine how new product concepts should be designed in order to achieve required security levels. Support the creation and evaluation of new internet and network product concepts utilizing leading edge security concepts. Participate in technology investigations, including secure coprocessors, biometrics, formal methods, design methodology for secure systems, power signature analysis, virtual private networks and classical cryptographic algorithms.

Must possess at least a bachelor's or its equivalent in Computer Science, Electrical Engineering or a related field. Classroom training or experience with algorithm analysis, scientific computing and advanced numerical analysis programming using Matlab and Maple, math background in filed and number theory, assembly language programming and knowledge of UNIX and LINUX administration is required.

Resume and/or cover letter must reflect each requirement above and specify reference code E1 or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700.

Systems Analyst

Pitney Bowes Inc. has an opening in its Stamford, Connecticut office for a Systems Analyst.

Responsible for the successful design, development, implementation, support and troubleshooting of the Company's major business computer applications, including billing and invoice generation. Work with end-users to determine both the business requirements of these systems and how to interface these new systems with the Company's existing hardware and software. Oversee and coordinate related development, testing and implementation activities. Codes in COBOL, Easytrieve, JCL, Transform, SOL, IMS and DB2.

Must possess at least a bachelor's or its equivalent in Computer Science, Engineering, Math or a related field and relevant experience as a Programmer Analyst, as well as experience with the full software development life-cycle including heavy design and COBOL, Easytrieve, JCL, SOL, IMS, DB2 and Transform or a related system (i.e. IMS DC).

Resume and/or cover letter must reflect each requirement above and specify reference code SA or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700.

Computer Consultant: 40hr/wk, 8am-5pm, $36,000/yr, Min. Requirements: Bachelor degree in Computer Science/related; maintain, evaluate & develop existing software; design, code, develop and test new software using C/C++ (non-Windows Systems), UNIX Shell Script, printer languages (PCL and EPL2) on Unix Sco and Linux Systems; internet E-Commerce development using CGI programming with HTML to handle real time internet order process; Client Warehouse Database maintenance and development; programming in UNIFY Direct HLI, SOL under RDBMS (UNIFY). 6 mo above exp. or in related occupation: programmer/analyst/computer lab consultant. Employer Paid Ad. Send resumes to PO Box 11170, Detroit, MI 48202. Ref #202464.

Senior Systems Analyst (MIS Storage Administrator)

Pitney Bowes Inc. has an immediate opening in its Danbury, Connecticut office for a Senior Systems Analyst (MIS Storage Administrator).

Analyze and administer the data storage systems for the Company and manage the space on a variety of storage device systems along with the utilization of magnetic tape. Responsible for the data protection and recoverability systems, as well as data access response time and storage platform implementations.

Must possess at least a bachelor's or its equivalent in Computer Science or a related field and relevant experience as a Network Administrator, in a network centric computing environment and with RAID, DASD, IBM Monitoring Systems, Tivoli, TMS, CMS, ADSM, IMS and CICS.

Resume and/or cover letter must reflect each requirement above and specify reference code MIS-SA or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700.

Programmer/Analyst

Pitney Bowes Inc. has an immediate opening in its Madison Heights, Michigan office for a Programmer/Analyst.

Design and implement solutions unique to an automated document factory. Develop and direct software system programming, testing procedures and documentation, as well as analyze software and programming requirements to determine feasible designs within production, time and cost restraints.

Must possess at least a bachelor's or its equivalent in Computer Science or a related field and relevant work experience as a Programmer/Analyst, including experience with systems analysis and design with Perl coding language, Windows NT Networking, including LAN and Novell Netware linkages, Microsoft SOL databases, web based architecture and interfaces, DJDE, METACODE, IPDS or binary language print stream, C++, Visual Basic, Streamweaver, Exstream software, midrange systems, AS/400, COBOL/400, SOL/400 and CL/400.

Resume and/or cover letter must reflect each requirement above and specify reference code P/A or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700.

Computers/Info Systems

METHODEX CONSULTING SERVICES, INC., a S/ware Consulting Co. seeks to fill the following positions in Irving, TX.

Sr. Software Consultant (Multiple Openings) must have BS & 5 yrs s/ware dvlpmt exp. or MA equivalent.

Programmer Analyst (Multiple Openings) must have BS & 2 yrs s/ware exp

Send resume to Methodox Consulting Services, Inc.: Srinivas R. Manne, 1517 W. Irving Blvd.; Irving TX 75061.

Circuitronics Corp. seeks Sr. Oracle Financials Engr. for HO office in Sanford, FL. DESC: Anlyz. & id user reqs, bus. logic, & s/w specs. to meet bus. obj. Mng. full life cycle dsgn, dev, impl, & admin. of Oracle based ERP bus. info. sys. & apps. util. Oracle RDBMS, SOL, PL-SOL, Unix & WinNT o/s. REC: BS in Bus, Bus. Admin, Finance, or Econ. + 3 yrs. exp. dsgn. & impl. Oracle ERP sys. & apps. util. Oracle RDBMS, SOL, PL-SOL, Unix & WinNT o/s. Prem. sal. + bns. & benes. Pls. reply to B. Patel, Job# CC-101, 223 Hickman Drive, Sanford, FL 32771.

Consulting Applications Analyst

A permanent, full-time position with a Fortune 200 Health Benefits Organization in Louisville, KY. 8+ years' development/team lead/project management experience required high level, hands-on skills with: Java, VB, ASP, Interdev, XML,Netdynamics, Oracle, and Mainframe development. Please send resume to:tstate@humana.com
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JDE Programmer Analyst. Develop and write computer programs using JD Edwards (JDE) Programming Standards. Bachelor degree in C.S., or sim major, or equiv. is req'd, as is 2 yrs of exp. as a JDE Programmer Analyst or in a JDE programming or consulting position using JDE Prog Stds. Competitive Salary. Resumes to Judy K. Bruce, HR Mgr, Job #0624.94, ALPS Automotive, Inc., 1500 Atlantic Boulevard, Auburn Hills, MI 48326.

Programmers/Analyst with 2 yrs exp. wanted in Carrollton, TX. Send resume to: HR Dept., SHC Solutions, 1205 West Trinity Mills Rd., Suite 214, Carrollton, TX 75006.

Programmer/Analyst w/BS degree & 2 yrs. exp. wanted in Houston, TX. Send resume to: HR Dept., Pro Cargo, 2700 Greens Rd., #H300, Houston, TX 77032.

National Instruments Corp., based in Austin, TX is currently seeking to fill multiple positions in the following:

Software Engineers Research, dsgn & dvlp s/ware in mainly C/C++ using OO dsgn & s/ware dsgn principles. Must have Bachelor's in Engg, or Comp Sci, Physics, or Math. CODE: CWSW

Fax resumes to: HR Department at 512-683-6924. Job Code must appear on resume.

Database Administrator wanted by Web Hosting Co in Fremont, CA. Manage, analyze, design, and develop various Oracle database applications; create procedures to ensure a reliable and secure information systems environment; provide systems administration for application and database servers; investigate and resolve all database related problems; & supervise the installation of new software and hardware systems relating to the database and Oracle database administration. Must have BA in Comp. Engg or its equiv. & 3 yr exp. as Database Administrator. Respond to: HR Dept., Three Riverway, Suite 555, Houston, TX 77056.

Proj. Coordinator - ERP (CINCOM) implementation. Def. b/z process for CINCOM implement; analyze Legacy data; load data to CINCOM; integrate with PILGRIM & AUTOTIME; maintain entire Cognos B/Z Intelligent Ste.; develop rpts.; report access with Cognos Access Mgr.; LDAP authentication; and Balanced Scorecard using OLAP drill down tech. BS + 2 yr. exp. + exp. in FI/CO Modules/Module Integration in SAP + COGNOS Certification in Powerplay Admin. Apply to PSC, 320 Wyehwood Court, Alpharetta, GA 30022 with proof of permanent work authoriz. from INS.

Programmer: Responsible for software project's requirement collecting & analysis, preliminary and detailed design, coding, testing, writing documents and on-site implementation, user support and further improvement in cattle industry. Plan, manage and track the schedule of whole development cycle and analyze the feasibility of project. Provide consultation to user and development staff. Req. BS or equivalent in CS or CIS with nine months exp. in job offered or programmer analyst. Must be proficient in CIS Management System, EID Reader, Visual Studio.NET, XML and RationalRose. $52,000.00/yr, 40/wk, 9-5. Send resume to LOR, Inc. at wlam@rrrassociates.com.

Amport, Inc., seeks Sr. Software Engineer in Boxborough MA loc. Develop, modify and sustain element and network management applications. Write specs, define user interface, code, debug, and document software. Must have working experience developing in Unix and Windows OS, C/C++, Java, PERL, TCL/TK, and Expect languages, AVMT, and Cisco IOS. Preferred knowledge of ATM, TCP/IP, SNMP, DSL, PPP, L2TP. Must have a BS in Comp. Sci. or related field and 5 yrs relevant exp; or have MS in Comp. Sci. or related field and 2 yrs relevant exp. Applicants should send resume to Amport, 21 Ida Rd, Marblehead, MA 01945.

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Radisys Corp. seeks Telecomm. S/W Engr. for office in Hillsboro, OR. DESC: Resp. for specification, design & validation of real-time embedded s/w sys. in Radisys telecomm. Products. Desgn., dev., & implmnt telecomm. equip. s/w util. OO meths and C/C++ to run on Win & rt o/s. Util. netwrk, spectrum & protocol analyzers to implement and validate h/w & s/w designs. Facilitate data comm. & netwrk mngmt. util. VOIP & TCP/IP. REQ: BS in Engr.,CS, Math or Phys.+6mos. exp. desg. & dev., telecomm. Equip. s/w util. OO meths., C/C++. & Win o/s. Implementing & validating telecomm. H/w & s/w desgns. Util. netwrk, spectrum & protocol analyzers. Pls. reply to HR, Job#IM0702, RadiSys Corporation, 5445 NE Dawson Creek Dr., Hillsboro, OR 97124 or email hr@radisys.com, reference Job#IM0702 in subject line.

Programmer Analyst sought by s/ware dvlpmt & consulting Co. (Melville, NY) Dsgn, dvlp, analyze, implmt, code IT applics using SQL Plus, PL/SQL, Oracle, Unix/SUN OS, Win. Must possess knowl or exp of marine s/ware dvlpmt. Min Reqmts: Bach or equiv in Science/Physics/Comp Sci/or equiv + 2 yrs & 6 mos exp in job offd. Will accept 3 yrs college education in listed fields/or any combo of education & exp that equates the min reqmts. Please respond to Rowena Cheng, VP, Trade Ship Inc, 201 Old Country Rd, Ste 202, Melville NY 11747. Fax: 631-673-8958

Programmer Analyst needed, w/exp in software applic. using: COBOL, REXX, JCL, Erwin, Shell Scripting, DB2/UDB, EE/EEE, AIX, OS/390, RDB & Java. Send resumes to: Netsource Inc. 12700 Dupont Circle, Tampa , FL 33626.

Programmer
Networking, design, maintenance and testing database structure and applications for teaching programming purposes.B.S. in CS, Data Proc. or rel. w/abil. to use Win/NT Server, Transact-SQL, TCP/IP, Oracle PL/SQL, MS SQL Server, RAID, Routing, Switching, DNS, MS Exchange. Knowledge of Russian, Ukrainian, Latvian languages is a must. Resume to A-Soft, Inc., P.O. Box 1270, Roswell, GA 30077.

Software Engineer - Williamsport, PA. Require experience in developing client/server applications using Sybase, Powerbuilder, Unix, NT, Cognos Powerplay/ Impromptu and SAS. Relocation within USA Possible. Attractive compensation package. Send resume to Suprlya Palayekar, Palayekar Companies, Inc., 1959 East Third Street, Williamsport, PA 17701.

Jr. Information Technology Specialist sought by Synergetics, Inc. to work in Ft. Collins, CO and other unanticipated job sites in the U.S. Develop a relational database to store and manage network performance data for all enterprise-wide applications and a web-based interface for data entry in an Ag-Business environment. Requires bachelor's or foreign equivalent in engineering, computer science, or computer engineering; two years experience as a software engineer programming in JAVA; working knowledge of ESRI GIS products such as ArcIMS, ArcSDE, and ArcInfo; and ASP, Visual Studio 6.0, SQL Server 2000, Ag-Business applications, and J2EE application development. Respond by resume to Bonnie-Lee Bowman, Synergetics, Inc., 1520 S. College Ave., Ft. Collins, CO 80524 and refer to job #4356.

Computer
ARINC, a leading provider of communications, information technology, and system engineering has an opening for a Staff Principal Engineer, with Animator experience, in our Marina del Rey, CA office. The individual will be responsible for working as a chief architect of graphical interface, networking and Java. Specifically, the individual will lead efforts, which utilize the Animator product. Individual must have a Bachelor's degree or foreign equivalent in Engineering, Computer Science or related field. Must have technical and working knowledge of Animator, as well as programming experience in Java, C++, C, Windows NT/2000 and UNIX operating systems. Visit us online to apply at:www.arinc.com/careers. Please refer to this ad when applying. Equal Opportunity Employer M/F/D/V.

Software Developer- CommVault Systems, Inc. is in need of a Software Developer for its Oceanport, NJ location. Design, develop, test, & implement software according to user needs & cost/scheduling constraints. Perform upgrades & correct errors in the system to maintain it after implementation. Must have a Bach. Deg. in Comp. Science, Eng'g, or related field, 2yr. exp. in the job offered or as a Software Eng, & exp. with C++ and Visual C++. EOE. Resume to: thoffman @commvault.com

Software Developer wanted by Software Design Co in Palisades Park, NJ. Must have Master's Degree in Elec Engg, Comp Sci., Electronics or Math. Respond to: HR Dept., Computer Best Service, Inc., 472 11th Street, Palisades Park, NJ 07650.

Software Engineer/Developer sought by NJ Securities Dealer. Must possess Master's degree or equivalent in Engineering or directly related field and 2 years exp. in software/systems development and design. Respond to: Human Resources Department: Knight Trading Group, Inc., 525 Washington Blvd., Jersey City, NJ 07310.

Senior Operations Analyst- Lotus Notes Administrator

Pitney Bowes Inc. has an opening in its Danbury, Connecticut office for a Senior Operations Analyst- Lotus Notes Adminitrator.

Help manage the strategy, tactics and projects related to the Company's messaging environment, and be responsible for day to day operations, maintenance and problem resolution in support of the Lotus Notes infrastructure.

Must possess at least a bachelor's or it's equivalent in Computer Science or a related field and relevant experience as a Lotus Notes Administrator, as well as hands on experience with both server administration and user support and a working knowledge of the entire spectrum of the Lotus Notes R4.6 environment, including Windows NT servers and NT workstations.

Resume and/or cover letter must reflect each requirement above and specify reference code LNA or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700

Programmer-Analyst req'd by NJ IT Co. must have Bachelor's Degree in Sci/Engg or Eqvlt and 2 yrs of exp in analyzing, designing, developing, implementing and testing Client Server and Web based applications utilizing C, C++, CORBA, HTML, DHTML, XML, Java Script, VB Script and Rational Rose in Unix and Windows NT environment, developing modules in C++ with Middle Layer using CORBA and COM/DCOM, utilizing PL/SQL to write stored procedures, packages and triggers, Crystal Reports for generating reports and utilizing and maintaining database such as Sybase, Oracle and SQL Server using ER-Win. Respond to HR Dept. Millennium Consultants, Inc. 25 Clyde Rd, Somerset, NJ 08873

Seeking qualified applicants for the following position in Memphis, TN: Senior Programmer Analyst: Formulate/define functional requirements and documentation for retail point-of-sale systems/applications based on accepted user criteria. Requirements: bachelor's degree* in computer science, MIS or related field plus 5 years of experience in systems/ applications development. Experience with retail point-of-sale systems/ applications development using Java, CORBA and systems/ integration/user acceptance testing also required. *Master's degree in relevant field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

Technical B.S./equiv. + 5 yrs exp. Specific exp. must include supporting large, complex integrated database systems with 20+ million records and 300,000+ transactions/day using COBOL II, CICS, DB2, JCL, TSO/ISPF, VSAM, MVS/OS390 & lifecycle exp. including planning, analysis, design, development, maintenance, enhancements & monitoring. To include 3 yrs exp using FileAid for DB2, CICSPLEX, ChangeMan,Controlm, AbendAid, Intertest, TMON (CICS&DB2), CICS TransactionGateway, CICS UniversalClient,MSOffice, MSProject, Visio & 2 yrs exp interfacing IBM mainframe w/other systems for online & batch data transfer using advanced CICS protocols. Exp. can be gained concurrently. Resumes to: Tracie Scott, GA DMVS 1200 Tradeport Blvd. Ste. 1158 Hapeville, GA 30354

Senior Programmer Analyst

Pitney Bowes Inc. has an immediate opening in its Stamford, Connecticut office for a Senior Programmer Analyst.

Work as part of an e-Commerce application team within the Company's e-Commerce and Product Supply area of IT to develop new web-based applications and support existing production of web-based applications utilizing various software.

Must possess at least a bachelor's degree or its equivalent in Computer Science or a related field and relevant experience as a Programmer, as well as with the software development lifecycle, HTML, Java, JavaScript, SQL, ASP, Broadvision and Oracle.

Resume and/or cover letter must reflect each requirement above and specify reference code SPA or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700.

SENIOR PROGRAMMER/ANALYST (Columbia, SC) to perform system analysis and design, develop, program, integrate and support computer software for agricultural bank loan applications using Object Oriented Analysis & Design multi-tiered architecture, data modeling, Visual Basic, SQL, Stored Procedures, MTS and SQL Server 7 on Windows 98/NT. Require: Baccalaureate degree (or foreign equivalent) in any discipline with at least 18 semester hours or 30 quarter hours (or foreign equivalent) of academic credit in Computer Science, or a closely related field, with 2 yrs of exp. in the position offered or as a Programmer/Systems Analyst; Exp. must include 2 yrs using Visual Basic. Competitive salary and benefits, 8am-5pm, M-F. Send resume to: Recruiter, AgFirst Farm Credit Bank, P.O. Box 1499, Columbia, SC 29202. Attn: Job CM

SENIOR PROGRAMMER ANALYST (AKA SW ENGINEER): Duties include: Develop computerized solutions and applications for business opportunities, management and reporting. Analyze business specifications and develop technical design specifications including hardware, software and database requirements. Plan, develop and test application systems to meet requirements. Interact with business operations to design specifications and describe logical operations. Test, debug, install and implement large distributed systems and monitor their performance. Provide programmers and analyst with systems and SW training, education and assistance in problem solving. Object oriented programming, systems analysis and DB development using: Visual C++, Delphi, VB, SQL Server and or ASP required. Min: Reqs.: Masters Degree (foreign equivalent accepted) in EE, CS or related field of study plus 2 years exp. in job offered or in related occupation (i.e. Programming and or Systems Analysis) OR IN ALTERNATIVE BS/BA and 5 years progressive experience in job offered or related occupation. Pre-or Post Master's experience accepted. MUST possess demonstrated expertise in the following: (1) Major systems installation including development, implementation and maintenance of distributed systems; (2) Application and DB development; and (3) OO programming, analysis and DB development using: Visual C++, Delphi, VB, SQL Server and or ASP. Basic pay is $70,500 per year FT, 40 hrs/wk and standard company benefits. EEO. Submit 2 resumes and respond to Case No. 2002-349, PO Box 989, Concord, NH 03302-0989.

Senior Software Engineer

Pitney Bowes Inc. has an immediate opening in its Danbury, Connecticut office for a Senior Software Engineer.

Expand the features and capabilities of the Company's document messaging product's mission critical real-time control system utilizing OOAD and C++ software under WinNT. Code, design, debug and deploy components of this large C++ application.

Must possess at least a bachelor's or its equivalent in Computer Science, Engineering or a related field and relevant experience as a Software Developer. Must possess experience using OOAD and C++ under WinNT on large scale, multi-developer software projects.

Resume and/or cover letter must reflect each requirement above and specify reference code SSEVC or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes, Inc., One Elmcroft Road, Stamford, CT 06926-0700.

Software Developer I wanted by developer of cutting edge time and labor management software solutions for engineering, manufacturing and maintenance operations industries. Master's degree in Computer Science required. Send resumes to Cindy McGreevy, Kaba Benzing America, Inc., 5753 Miami Lakes Drive, Miami Lakes, Florida 33014.

Senior Analyst/ Programmer (e-commerce)

Southwest Corporate is a 4.4 billion dollar wholesale financial institution based in North Dallas. This position develops & supports automated data processing systems & Web-based applications. Perform analysis, design, coding, testing, documentation, implementation & support of application software. Utilize the following to develop applications: CCUN/400, ARKSYS, Object Oriented Analysis/ Object Oriented Design concept & 3-tiered client/server using Distributed Component Object Model, RPG/400, HTML, Java Script, CGI Script, UML, Visual Basic, AS400 utilities, UNIX, several PC-based utilities, IIS, MTS, & SQL. Requirements include, Master's degree in Computer Science or Software Engineering; Visual Basic certification; 40- hour workweek. For consideration, please forward resumes to:
Fax (972) 861-3306
Human Resources – CW
7920 Belt Line LB –109
Dallas, TX 75254
No phone calls please.

Oracle DBA: Maintain, administer & support data base & support data warehousing team; EMC Clarion & RAID arrays; Sun Solaris, Unix scripts, Crystal Reports, TOAD & ERWin. Req. BS in comp sci, 3 yrs exp DBA & knowledge of Oracle Parallel Server. Resumes L. Anderson MediaOcean, 404 885-9949

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- Arizona
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All positions offer competitive salary and excellent benefits, including bonuses and stock options. E-mail your resume in ASCII text format to: resume@microsoft.com (indicate Job Code A22dn-0805 in the subject header). Or mail your resume to: Microsoft Corporation, Attn: Recruiting Department, Job Code: A22dn-0805, One Microsoft Way, Redmond, WA 98052-8303. No phone calls please. We are an equal opportunity employer and support workforce diversity. Please visit our Web site for more information.

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COMPUTER/IT
Senior Systems Programmer /Analyst. Rancho Dominguez, California. Responsible for the analysis, design, programming and implementation of Baan ERP applications for the U.S. wide locations of company's Service Division, including new systems development and maintenance tasks. Efforts are directed toward the design, development, programming and maintenance of Baan ERP applications, which include Finance, Service Management, Warehouse Management, Order Management, Purchasing, etc. Work with all levels of company management, with bulk of contacts being middle management. Requires: B.S. or foreign equivalency in Engineering or related field and 2 yr. exp. in the job offered or 2 yr. exp. as a Software Consultant /Engineer. Exp. which may have been obtained concurrently must incl.: 2 yr. exp. in the design, programming and implementation of Baan ERP applications. EOE. 40hrs/wk. Send resume (no calls) to Ms. Monica Vargas, Flowserve Corporation 2300 East Vernon Avenue, Vernon, California 90058.

Systems Analysts to analyze user data processing requirements, procedures & problems to improve computer systems & software Bach. or equiv. in Computer Science +2 yr exp req. Job site: various unanticipated sites throughout the U.S. Send your resume to Span Systems Corporation, 230 Sherman Ave., #9, Berkeley Heights, NJ 07922

COMPUTER/IT
Manager, On-Air Applications (Ft. Lee, New Jersey). Req. Master's degree in comp. sci., comp. engrg. or a related field & 3 yrs' exp. in the job offered or in software architecture & software dev. Stated exp. must incl. one yr. of software dev. in a tv broadcast/cable environ. Must have exp. with C/C++, OpenGL, Java, Java Servlets, UML & Rational Rose & at least one yr. exp. leading a software dev. team in the full software dev. life cycle. Exp. may be concurrent. Direct & coordinate a team of software developers in full software dev. life cycle includ. requirements analysis, design, develop. & testing of on-air applications utiliz. C/C++, OpenGL, Java & Java Servlets on UNIX, IRIX & NT platforms. Lead dev.team in new application & system design, integration & rollout to business. Supervise subordinate IT professionals. Send resume to opportunities @gecareers.com. Put CNBC /274174 in the subject line or alternatively fax resume to (201) 346-6506, Attn: CNBC Human Resources 274174.EOE

SENIOR PROGRAMMER/ANALYST to lead a team in the analysis, design, development and implementation of application software using Visual Basic, C++, ASP, Visual Scripts, JavaScripts, HTML, DHTML, XML, IIS, SQL, SOR, COBOL, NSDK, Macromedia Flash, as well as OLAP including Essbase; Analyze and implement financial ERP applications including PeopleSoft. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with two years of experience in the job offered. Competitive salary offered. Apply by resume to: Anie S. Chinarian, Caliber Body Works, Inc., 17771 Cowan Avenue, Suite 100, Irvine, CA 92614; Attn: Job SP.

Sr. Software Engineer. Job location: Gaithersburg, MD. Duties: Design & develop software for telecomms. systems. Resp. for the set-up, testing & maint. of networks using TCP/IP. Perform system integration testing as well as testing of SIP & MGCP protocols & OAM interfaces using web interfaces, command line, protocol monitors & WinRunner. Resp. for set-up of mail & NAT servers & testing & troubleshooting LAN network problems. Provide maint. of corp. servers using Solaris & corp. routers using Cisco. Resp. for performing new config. testing & install. & upgrade of third party equip. Requires: B.S. (or foreign equiv.) in Comp. Sci., Eng. or related field & 4 yrs. exp. in the job offered or 4 yrs. exp. as a Consultant or Systems Analyst. Concurrent exp. must incl.: 4 yrs. exp. in the testing & maint. of networks using TCP/IP & 4 yrs. exp. performing config. testing. 40 hrs./wk.; 8:00 a.m. to 5:00 p.m. Send resume (no calls) to: Mary Alice Davis, BroadSoft, Inc., 220 Perry Pkwy., Gaithersburg, MD 20877.

Sr. Ntwrk Eng'r. Columbia, MD. Resp. for design, config., & implementation of large secure internal WAN integrated w/ public access ntwrk. Config. Cisco routers/switches, PIX firewalls, address transl., maintain & configure multiple EIGRP processes & redistributed RIP for IP & IPX routing. Resp. for all aspects of WAN carrier facility migration, IP addressing/summarization, config. mgmt, perf., tech. docmtn., & troubleshooting. REQUIRES: B.S. (or foreign equiv) in Electronic Eng'r or Comp. Sci. + 2 yrs exp in job offered. Exp., which may have been obtained concurrently, must include 2 yrs. exp. config. Cisco routers, & 2 yrs. exp. config. PIX firewalls. Mail resumes (no calls) w/ ad to D.Messineo, DiData, 8840 Stanford Blvd, Ste 3100, Columbia, MD 21045

TECHNICAL PROFESSIONALS

White Amber, Inc., a rapid growth IT/Software company, seeking software developers at all levels of experience. We want to hear from you if you have any of the following skills:

- E-commerce development using Lotus Notes Domino R4 or later, Oracle 8i, JavaScript and Web Development technologies, or
- Data warehousing using Oracle8i and Oracle's Web Application Server on UNIX platforms.

We offer comprehensive benefits including medical/ dental/life insurance and 401(k). Fax resume indicating position of interest to: Attn: HR (516) 616-5024.

COMPUTER/IT
Ouality Assurance Analyst. (Troy, MI). Req. a Bachelor's degree (or higher) or equiv. foreign educ. in comp. sci., comp. tech., business admin., or statistics, & 2 yrs.' exp. in the job offered or 2 yrs.' exp. in the execution of SAP R/3 quality assurance review & testing procedures using Mercury Interactive tools. All stated exp. must include: performance of integration, regression, & stress tests using WinRunner; & use of Test Director to manage & administer testing process. Must have Mercury Certified Product Specialist certification. 40 hrs./wk. 8:00-5:00. Apply with resume to LaWanda R. White, Delphi Corporation, 5825 Delphi Drive, Troy, Michigan 48098. EOE. Reference #1119 when applying.

Programmer/Analyst. Develop software applications using COBOL with SOL interface using via SOL software; develop new applications in COBOL/CICS and VSAM/ISAM in a DOS/VSE environment; upgrade current system from CMS to MVS; convert VSAM/ISAM files to DB2 relational database. BS or foreign equivalent in Computer Science, Computer Engineering or Mechanical Engineering; 2 yrs experience in job offered; 1 yr experience using COBOL with SOL interface, COBOL/CICS in VSE environment, DB2 database; all experience may be cumulative. 40 hours/wk, 8:00 a.m. to 5:00 p.m., $62,915.84/yr. Send resume to MDCD/ESA, PO Box 11170, Detroit, MI 48202, Ref. #202469. Employer Paid Ad.

Applisoft, Inc., is hiring Programmers/Analysts, Software Engineers, System Administrators, Functional Application Consultants and Market Research Analysts. May be assigned to client sites nationwide. Send resumes to Applisoft, Inc.,12280 Saratoga-Sunnyvale Road, Suite # 105, Saratoga CA 95070 or email applisft@ix.netcom.com.

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- Database Analyst/Business Systems
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For more information please go to http://www.equant.com EOE

Technical Analyst II. Req. a bach degree or higher in comp. sci., management of technology, or a related field, & 2 yrs of exp in the job offered or 2 yrs of exp in IT & operations support. All of stated exp must incl file & print server administration, performing hardware & software upgrades, & supporting the development & implementation of IT projects. Must be fluent in Spanish & English. Provide technical & operations support to cable & broadcast TV operators in Latin America & the Caribbean regarding satellite transmission & distribution of digital TV programming content. Provide IT support, troubleshooting, & answer user queries for Atlanta & Miami based staff. 40 hrs/wk. Send resume to F. Tapia, TBS Latin America, 1030 Techwood Dr., Atlanta, GA 30318. EOE.

Network Administrator:

Analyze computer systems, establish network; prepare specs. for hardware and software systems. Write descriptions of user needs and instructions for operations. Req. Assoc. Degree (or Equiv.) in Business (or related) and 2yrs. exp. in job. Resume to A&S Minute Sales, 1735 Lexington Rd., Athens, GA 30605

User Support Analyst: Investigate/resolve EDP accounting sys customer usage/h'ware/s'ware problems. 9a-5p. Req: 2 yrs exp or in EDP accounting sys info tech support. Resume: J Clarke, Management Accounting Software Solutions, 10233 SW 23rd Ct, Miramar, FL 33025.

Computer Programmer: For technology-based mngmnt consulting firm, develop Web user interface for company's WebForPhone project. Req's: Master's degree, or equiv, in Comp Sci or a related field. 2 yrs exp in job offered or 2 yrs exp as a Computer Programmer. Exp must include ASP & Socket programming. Prof in Java, Visual Basic, C, C++, JSP, PL/SOL, MS SOL Server 7.X, Oracle 7.X, Internet information Server 4.0 /5.0, Active Server Pages, WebLogic 5.5, WebSphere, TCP/IP, Active X, RMI, EJB, SAPI, WIN API and WININET API. Send resume to: A. Share. 2400 chestnut St. Phila., PA 19103

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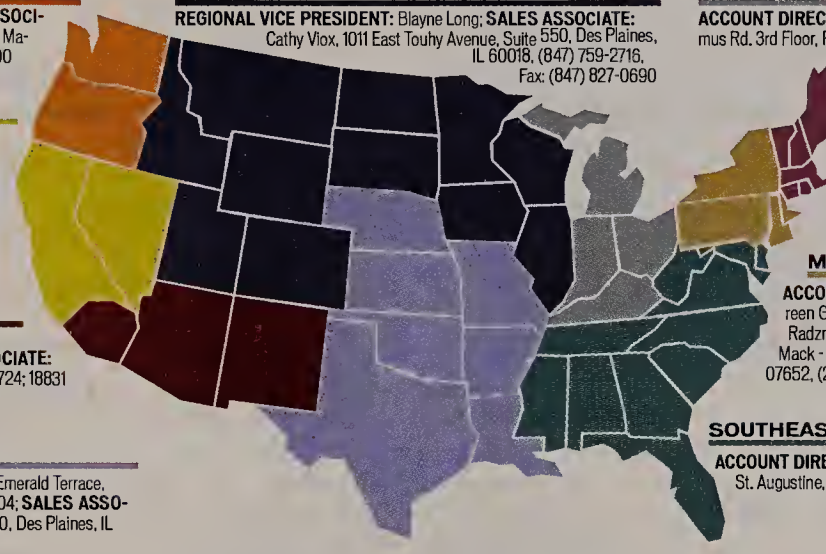

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IBM/PwC

Instead of going into companies mainly as a provider of IT services and technologies, IBM is hoping to engage with clients a step earlier in the process — at the business requirements stage, Moore said.

"IT service purchases are being wrapped more tightly with business process objectives," Moore said. IBM wants to position itself to take advantage of that trend, she added.

PwC Consulting will help IBM address a current weakness it has in vertical, industry-focused business process consulting capabilities, added Linda Cohen, an analyst at Stamford, Conn.-based Gartner Inc.

"If you are an IBM customer, you can expect to see them move up and out into the business ranks to sell their services in the future," Cohen said.

Meanwhile, customers of PwC Consulting will gain access to a wide range of IBM capabilities, including leading-edge technologies and financing services, said Greg Brenneman, PwC Consulting's president and CEO, during a conference call.

"I think it's a good match," said R. Bruce Johnson, the information services director at Bryan Cave LLP, a St. Louis-based law firm. "Both are quality organizations with highly professional consulting services. The deal should strengthen IBM Global Services and maybe aid in demonstrating that IBM consulting doesn't just mean IBM solutions."

On the competitive front, if IBM was far ahead of its rivals before, the merger will put it in a league of its own now, analysts said. In terms of sheer numbers, a postmerger IBM Global Services will have 180,000 employees, which is close to the combined total of 205,000 employees fielded by its closest rivals, Electronic Data Systems Corp. and Hewlett-Packard Co.

Combined Strength

IBM GLOBAL SERVICES
- 150,000 employees
- $35 billion in revenue
- Expertise in systems integration, IT outsourcing services
- Global presence

PwC CONSULTING:
- 30,000 employees
- $4.9 billion in revenue
- Expertise in business process consulting services, especially in key verticals such as pharmaceuticals, oil and gas, and defense

As a result, expect to see other companies such as EDS, Accenture Ltd. and KPMG Consulting Inc. forge tighter relationships with technology vendors such as HP and Sun Microsystems Inc. to counter IBM's dominance, Cohen said. "This merger has pretty much left everybody else in the dust," she said.

But Stamford, Conn.-based Meta Group Inc. warned in a report that IBM will face a major challenge in integrating PwC's operations with its own.

"PwC is a partnership organization, and each individual partner owns his relationships with his clients. IBM uses a top-down sales organization, with IBM sales executives owning the relationships with clients," the report noted.

PwC Consulting Spin-off Voided

The deal between IBM and PwC Consulting preempts the latter's plan to spin itself off as an independent entity from parent PricewaterhouseCoopers' core accounting business.

PwC Consulting had been planning to launch an initial public offering later this year and then change its name to Monday. But now that won't happen unless the agreement with IBM falls apart.

"This transaction fulfills our commitment to fully separate PwC Consulting from PwC," said PricewaterhouseCoopers CEO Samuel A. DiPiazza Jr. in a statement. "It will unleash the consulting unit from the regulatory restraints of our industry and will allow the business to reach its full potential."

At $3.5 billion in cash and stock, the merger represents a relative bargain for IBM. The purchase price is less than a quarter of the $18 billion or so that rival Hewlett-Packard Co. had been prepared to pay in September 2000 in a failed bid to acquire PwC Consulting.

Since then, HP claimed, it has had several opportunities to buy PwC Consulting but has chosen not to pursue them.

"We understand how hard it will be to integrate these two businesses because of the PwC partnership model, and that some customers will perceive this as a loss of independence," HP said in a statement responding to the IBM announcement.

HP added that it remains committed to its strategy of partnering with top IT consulting and services firms, including Accenture, KMPG Consulting, Deloitte Consulting and Cap Gemini Ernst & Young.

"Customers want an alternative to IBM. This announcement does not change that and in fact may make customers even more anxious to source [IT services from] an alternative," HP said.

– Jaikumar Vijayan

WorldCom Problems Could Endanger Federal Contracts

Arrests of former executives pose ethics review risk

BY PATRICK THIBODEAU
WASHINGTON

At Johnson Controls Inc., some 14,000 managers are required to take online ethics training. For the Milwaukee-based supplier of automotive parts, the training is an important part of doing business.

"This is plain and simply the way we choose to go to the market," said John Kennedy, the company's vice president and general counsel. "If you do it right the first time, it will be less costly and create greater customer satisfaction."

That's a message that may seem painfully obvious to the former WorldCom Inc. executives who were arrested and charged last week [QuickLink: 31838]. And those charges could be costly to WorldCom if it's put on the list of nearly 600 companies that have been suspended from getting new government contracts.

Federal officials aren't saying whether a WorldCom suspension is being considered or if there is any risk that the company will join Enron Corp. and Arthur Andersen LLP on the suspension list. But analysts say indictments of officials are one of the triggers that could put a company on that list.

"Typically, the common denominator in many suspensions is an indictment," said Thomas Madden, an attorney at Venable LLP in Washington and a federal contracting expert. But suspension isn't automatic and doesn't happen in every case. The government will also look at whether the company is currently behaving responsibly and what actions it's taking to correct problems, among others factors, he said.

Government ethics standards leading to suspension are far from from black and white. Each agency is allowed to suspend a contractor for a year or bar it from working for it for a much longer period.

And while the government has an extensive list of guidelines for examining a company, "you have to make judgement calls," said Joseph Neurauter, assistant deputy associate administrator for acquisition policy at the U.S. General Services Administration and a former military judge. "You have to have somebody who is willing to make some hard calls, make some decisions and try to do what's right."

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Critics of government suspension policies say smaller companies, without resources, are more likely to be suspended than larger ones. And, they say, government agencies can suspend first and hold hearings later.

Ethics training can't prevent problems, but it does offer some protection, said Kennedy, whose firm uses a legal compliance and ethical training system developed by LRN, the Legal Knowledge Co. in Los Angeles.

"I think this type of training will protect you from the manager who thinks they are operating in the best interest of the company by breaking the law," said Kennedy. "But I think there will always be people who break the rules and cheat."

WorldCom CEO John Sidgmore, in explaining his company's actions before a congressional committee last week, said as much: "Unfortunately, you can't very easily defend against a deliberate change to the books, and that's really what happened."

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BPA ABM

FRANK HAYES/FRANKLY SPEAKING

Back to School

LET'S SAY THIS UPFRONT: That Princeton University admissions director was wrong. He was wrong to "test security" on a Yale University admissions Web site designed to let prospective Yalies find out whether they'd been accepted. He was wrong to repeatedly access would-be students' records using names, birth dates and Social Security numbers from Princeton's admissions files — including that of President Bush's niece Lauren [QuickLink: 31730].

He was wrong, yes — and criminally dumb on all counts.

Now let's move on to the other criminally dumb figure in this fiasco. That Yale Web site was designed by a self-promoting Yale sophomore who brags that he has worked for Microsoft since he was 14. He's the genius who decided that birth dates and Social Security numbers would make the perfect passwords because of their "personally identifiable nature," according to the *Yale Daily News*, the student newspaper that broke the story late last month before it was picked up by *The Washington Post* and the wire services.

"Personally identifiable"? What was this kid thinking? If there's one thing we *don't* want a password to be, it's a piece of information that's easy for an unauthorized person to guess or learn. And that's *exactly* the kind of "authentication" you get from birth dates and Social Security numbers.

Yes, they're easy for users to remember. They're also incredibly easy for outsiders to acquire. Employers ask for them. Credit-reporting companies are awash in them. Many states even include them in publicly available driver's license records.

Which means they're worse than useless for authenticating that a particular user is who he claims to be. Asking for such easily acquired information as a password is like begging unauthorized users to walk in.

Does this seem obvious? Good — that means you haven't forgotten Security 101. You haven't been sucked in by the idea that in a world of firewalls and VPNs and crypto and biometrics, the old rules about security no longer matter.

Sure, those security technologies are a good and valuable thing. These days, no one can protect systems without them. Piling on as many barriers as possible to protect proprietary information and user privacy just makes good sense.

But that's only a beginning. It's no replacement for real security.

That's why good passwords still matter. So does regularly examining access logs — the logs for that Yale admissions site clearly showed the suspicious cluster of accesses from Princeton, but no one reviewed them until *after* the unauthorized access was exposed.

Outside audits of security still matter, too. Yale actually has an Information Security Office that investigates cases such as identity theft — but apparently no one talked to the office until after the site had been up for six months and had already been hacked.

And the practice of assuming the worst — about rivals, pranksters, thieves and assorted bad guys — will always matter. There's no replacement for a reality check on a security plan by asking basic questions like, "If a hacker saw this log-in screen, could he go away and acquire the information to log in as someone else?" and "Who might want to get unauthorized access to this information, and will our security measures keep them out?"

That's the essence of security. It's not a collection of technologies. It's a way of thinking.

None of this is complicated or sophisticated or new. It's straight out of Security 101, base-level stuff, the concepts anyone designing a publicly accessible system that contains someone else's personal information should know in his sleep.

Don't forget it, the way they did at Yale.

Because if you forget Security 101, nothing else you do will make your systems secure. ◗

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at **frank_hayes@computerworld.com.**

SHARK TANK

IT PILOT fish walks into the data center to find the shift supervisor trying to remove one of the 2-foot-square tiles from the raised floor. Supe keeps slapping the tile puller – a pair of suction cups connected by a handle – against the tile, but it just won't stick. "Upon being asked for help, I explained that the puller works by suction," says fish, "and it can't stick to the air-vent floor tile he's trying to pull – which has a hundred holes in it to allow air to pass."

ALIGNING preprinted forms in a dot-matrix printer is tricky, so IT pilot fish programs a test page to help with the process. Frustrated user complains, "I've printed dozens of test pages, and the alignment isn't any better than on the first page." Fish: Are you adjusting the form between test pages? User: "Why should I have to do that?"

PERFORMANCE consultant pilot fish at a military site gets complaint from an officer: A report he wants takes 25 hours to arrive after he orders it. Fish runs the report himself – it takes 10 minutes. "The other 24 hours and 50 minutes?" says fish. "Major Tom asks Capt. Bill for the report, who tells Sgt. Phil who asks Cpl. Cliff who tells Pvt. Joe, who schedules the run and then returns the report up the chain of command."

SUPPORT REP pilot fish for a software vendor gets an e-mail from a happy customer – installation went fine, no problems, thanks a lot. Fish forwards it to the department VP, labeling it "FYI." Reply from VP: Don't send FYIs in the future that "raise other questions." What question did fish's FYI raise? Grumbles fish, "That's what *we're* trying to figure out."

Raise some questions: **sharky@computerworld.com**. You get a stylish Shark shirt if we use your true tale of IT life. And check out the daily feed, browse the Sharkives and sign up for Shark Tank home delivery at *computerworld.com/sharky*.

The 5th Wave

"What you want to do, is balance the image of the pick-up truck sittin' behind your home page, with a busted washing machine in the foreground."

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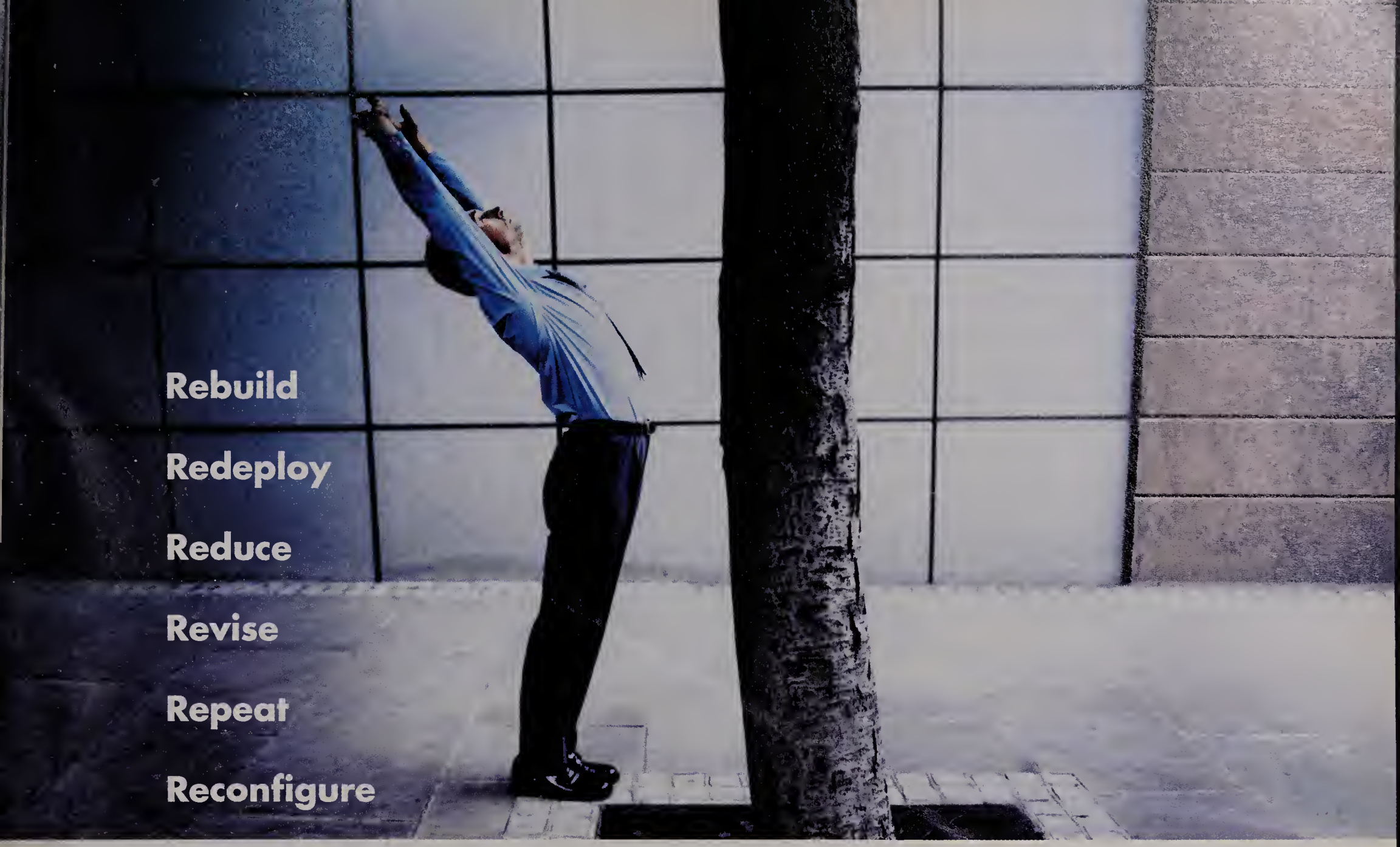

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